

St. Paul Park

CERTIFIED MAIL: 9171 9690 0935 0089 4336 04

January 19, 2017

Air Quality Tracking Coordinator Compliance Determination Unit Air Quality Division Minnesota Pollution Control Agency 520 Lafayette Road North St. Paul, Minnesota 55155-4194

RE: Fourth Quarter 2016 Excess Emission and CEM Report

St. Paul Park Refining Co. LLC AQD Facility ID No: 16300003 AQD File No: 0203 (AI ID 447)

Dear Sir/Madam:

St. Paul Park Refining Co. LLC is providing the Minnesota Pollution Control Agency (MPCA) with the Excess Emission and Continuous Emissions Monitor (CEM) Downtime Report for 4th Quarter 2016.

Please contact Shannon Lian at (651) 769-6766 if you have any questions or if you need additional information.

Respectfully,

Richard Hastings

Vice President and Refinery Manager

St. Paul Park Refining Co. LLC

Enclosures

cc: Patrick Foley (EPA) w/report - CERTIFIED MAIL: 9171 9690 0935 0089 4336 11
USEPA c/o Matrix w/report - CERTIFIED MAIL: 9171 9690 0935 089 4336 28
Ms. Jennifer Carlson (MPCA) w/report - CERTIFIED MAIL: 9171 9690 0935 089 4336 35
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Fourth Quarter 2016 Excess Emission and CEM Report

St. Paul Park Refining Co. LLC

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Appendix A AMP Monitoring Data

Sample Pt. 1 - C3/C4 Splitter Overhead

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Sample Pt. 3 – Isom Stripper Bottoms

Sample Pt. 4 - Alky Feed

Sample Pt. 5 – Isom Make-up Hydrogen

Sample Pt. 6 – PSA Off-gas

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Appendix B Quarterly CGA Results

Cylinder Gas Audits/Internal Calibration Error Tests Conducted - All CGAs Passed

| November 7, 2016 | EQUI33 | #3 SRU (O ₂)/ (SO ₂) | | |
|---|---------|--|--|--|
| November 7, 2016 | EQUI4 | #2 Crude 2-B-3 (O ₂)/ (NO _X) | | |
| November 8, 2016 | EQUI16 | #2 SRU (O ₂)/(SO ₂) | | |
| November 8, 2016 | EQUI14 | HDH 32-B-1 (NO _X)/ (O ₂) | | |
| November 8, 2016 | EQUI42 | Boiler #7 $(O_2)/(NO_x)/(CO)$ | | |
| November 8, 2016 | EQUI43 | Boiler #8 (O ₂)/(NO _x)/(CO) | | |
| November 9, 2016 | EQUI328 | WWTP Thermal Oxidizer (H ₂ S) | | |
| November 9, 2016 | EQUI28 | VRU (TOC as Propane) | | |
| November 10, 2016 | EQUI44 | Heater 8-B-1(NO_x)/ (O_2) | | |
| November 15, 2016 | EQUI2 | FCC Opacity | | |
| December 5, 2016 | COMG7 | Fuel Gas Balance Drum (Reformer) (H ₂ S) | | |
| December 6, 2016 | TREA13 | #1 Flare (H2S) | | |
| December 7, 2016 | TREA13 | #1 Flare (SO2) | | |
| December 20, 2016 | EQUI2 | $FCC (O_2)/(SO_2)/(CO)/(CO_2)/(NO_x)$ | | |
| NIST -Traceable Opacity Filter Certifications | | | | |

Relative Accuracy Test Audits (RATA) - None conducted this quarter.

Section 1

Report Certification

Certification for Fourth Quarter 2016 CEM Excess Emission and CEM Downtime Report

As of September 15, 2016, Western Refining Terminals, LLC, assumed ownership of certain assets associated with the St. Paul Park Refinery. This change in ownership is reflected in an administrative amendment submitted to MPCA originally on September 21, 2016 with a revised submittal provided on November 15, 2016. A separate certification is provided by Western Refining Terminals, LLC as co-permittee for those assets.

This section of the report serves as the St. Paul Park Refining Co. LLC written certification of the information contained within this report. This certification is comprehensive of the entire report and replaces the need for certification of each of the Excess Emissions and CEM Reporting Forms.

St. Paul Park Refining Co. LLC

Based on the information and belief formed after reasonable inquiry, the statements and information in this report are true, accurate, and complete.

St. Paul Park Refining Co. LLC

Richard Hastings, Vice President and Refinery Manager

Date

Certification for Fourth Quarter 2016 CEM Excess Emission and CEM Downtime Report - VRU (EQUI028) and VCR (COM028)

As of September 15, 2016, Western Refining Terminals, LLC, assumed ownership of certain assets associated with the St. Paul Park Refinery. This change in ownership is reflected in an administrative amendment submitted to MPCA originally on September 21, 2016 with a revised submittal provided on November 15, 2016 This change in ownership is reflected in an administrative amendment submitted to MPCA on November 15, 2016. Pursuant to that amendment and the associated change in ownership, this certification is provided by Western Refining Terminals, LLC as co-permittee for those assets now owned and operated by Western Refining Terminals, LLC.

This section of the report serves as the Western Refining Terminals, LLC written certification of the information contained within this report. This certification is comprehensive of the entire report and replaces the need for certification of each of the Excess Emissions and CEM Reporting Forms.

Western Refining Terminals, LLC

Based on the information and belief formed after reasonable inquiry, the statements and information in this report are true, accurate, and complete.

Western Refining Terminals, LLC

Matthew L. Yoder, Senior Vice President Operations

Dota

Section 2 Report Summary

Excess Emissions Summary Fourth Quarter 2016

Excess Emissions Summary

Incident A (43360) - FCC CO Exceedance during Start-up of the DDS Unit and Shutdown of the HDH Unit

On October 1, 2016, during the start-up of the DDS Unit and preparation for the shutdown of the HDH Unit, changes in the composition of available FCC feed resulted in an upset of the FCC Unit and three, 1-hr exceedances of the CO 500 ppm limit due to an unexpected drop in the dense bed temperature.

Since measured CO data points are not verifiable or accurate when 50% greater than the high calibration gas concentration, a value of 1,332.0 ppm (1.5 times the daily span calibration gas concentration of 888.0 ppm CO) was substituted for all greater data points. The recalculated and verifiable value is provided in the last column of the table.

| Periods Over 500 ppm CO @ 0% O ₂ 1- hour Avg. | Date and End Time | Measured 1-Hour Avg. (ppm CO) | Verified 1- hour Avg. (ppm CO) | O2 Rates, volume % |
|---|-------------------|-------------------------------|--------------------------------------|-----------------------|
| 1 | 10/01/16, 11:00 | 506 | 426 | ≥ 1.0 |
| 2 | 10/01/16, 12:00 | 1644 | 1060 | ≥ 1.0 |
| 3 | 10/01/16, 13:00 | 901 | 606 | ≥ 1.0 |

Incident B (43374) - FCC CO Exceedance Resulting from Unit Malfunction

On October 5, 2016, while attempting to take the FCC Main Blower offline for maintenance, the main discharge valve was not closed initially and the check valve was relied upon for positive shutoff. The Main Blower's discharge pressure dropped below the Auxiliary Blower's pressure allowing for air flow out of the Main blow-off vent, rather than to the Regenerator. The FCC Regenerator received insufficient oxygen, which led to incomplete combustion of catalyst carbon burn and flue stack CO levels that exceeded the hourly CO limit of 500 ppm. To prevent recurrence, additional clarity was added to the operating procedure to ensure the discharge pressure on the Main Blower is higher the Auxiliary Blower. A verification and recording of the blower discharge pressure is also required.

Since measured CO data points are not verifiable or accurate when 50% greater than the high calibration gas concentration, a value of 1,332.0 ppm (1.5 times the daily span calibration gas concentration of 888.0 ppm CO) was substituted for all greater data points. The recalculated and verifiable value is provided in the last column of the table.

| Periods Over 500 ppm CO @ 0% O ₂ 1-hour Avg. | Date and End Time | Measured 1-Hour Avg. (ppm CO) | Verified 1- hour Avg. (ppm CO) | O ₂ Rates, volume % |
|---|----------------------|----------------------------------|--------------------------------------|--------------------------------------|
| 1 | 10/05/16, 0:00 | 762 | 517 | ≥ 1.0 |

Incident C (43451) - Flare H2S Exceedance from Valve Malfunction

On November 4, 2016, while blocking in the hydrogen to the DU Unit, a double-block valve in the HDH Unit leaked, caused pressurization of a line in the DU Unit and relief of a PSV to the flare. Emergency relief of the PSV to the flare resulted in three exceedances of the flare 3-hr rolling H₂S average.

SPPRC believes these periods to be exempt under SSM provisions of the regulations and is providing the data for informational purposes only.

| Periods Over 162 ppm H ₂ S, 3-hour Avg. | Date and End Time | Measured 3- Hour Avg. (ppm H ₂ S) |
|--|-------------------|--|
| 1 | 11/04/16, 0:00 | 666 |
| 2 | 11/04/16, 2:00 | 667 |
| 3 | 11/04/16, 3:00 | 655 |

Incident D (43475/43476) – Visible Emissions from the Flare during Alky Unit Shutdown/Start-up

Two valves supply steam to the flare (i.e., main valve and steam trim valve). To prepare for planned work on the flare steam trim valve, the valve was isolated and drained on November 16, 2016. During an emergency shutdown of the Alky Unit on November 16, 2016 to repair a leaking valve, at 6:40 am the flare smoked. Realizing the steam from the trim valve was unavailable, the Console Operator manually adjusted the main flare steam supply to stop the smoking. The event resulted in visible emissions for sixteen (16) minutes in a two-hour period.

During start-up of the Alky Unit on November 16, 2016 at 15:17, the alky iso-stripper relieved to the flare from a process safety valve due to over-pressurization. This event periodically impacted the flare for approximately 2.5 hours until the process stabilized. This event subsequently resulted in visible emissions > 5 min in 2 consecutive hours (total of approximately 7 minutes). Complications with the flare steam flow meter were also noted during this time period.

SPPRC believes these periods to be exempt under SSM provisions of the regulations and is providing the data for informational purposes only.

Incident E (43491) - Flare H2S Exceedance During #2 Reformer Start-up

An emergency shutdown of the #2 Reformer occurred on November 5, 2016 due to a tube leak on the 36B1 heater. During start-up of the #2 Reformer Unit on November 19, 2016 and sulfiding of the Reformer Guard Case Reactor (i.e., part of the start-up process), compressor recycle gas was sent to the flare. Although the H₂S scavenger chemical to the flare was increased, there were three exceedances of the flare H₂S 3-hr limit. SO₂ Emissions during this period were < 500 lbs/24-hr period.

SPPRC believes these periods to be exempt under SSM provisions of the regulations and is providing the data for informational purposes only.

| Periods Over 162 ppm H ₂ S, 3-hour Avg. | Date and End Time | Measured 3- Hour Avg. (ppm H ₂ S) |
|--|-------------------|--|
| 1 | 11/19/16 13:00 | 219 |
| 2 | 11/19/16 14:00 | 236 |
| 3 | 11/19/16 15:00 | 207 |

Incident F (43496) - Flare H2S Exceedance

On November 23, 2016, an exceedance of the 162 ppm H₂S 3-hour rolling average occurred. The rate of flare H₂S chemical scavenger was increased and existing procedures for determining sources of high flare flow were used. No abnormal flaring was documented from the HDH, DDS or #1 Crude Units (i.e., high H₂S units). Although a detailed investigation was completed, a source of high H₂S was not identified. A troubleshooting guide for high H₂S events is being developed.

| Periods Over 162 ppm H ₂ S, 3-hour Avg. | Date and End Time | Measured 3- Hour Avg. (ppm H ₂ S) | |
|--|-------------------|--|--|
| 1 | 11/23/16, 12:00 | 231 | |
| 2 | 11/23/16, 13:00 | 214 | |
| 3 | 11/23/16, 14:00 | 171 | |

Incident G (43541) - Flare H2S Exceedance Due to Equipment Malfunction, DU Stripper Over-pressurization and Lifting of PSV

On December 18, 2016, the DU Stripper Overhead pressure transmitter froze, causing the PSV (29-PSV-6) to lift to the flare. Operators thawed the pressure transmitter and the H₂S scavenger chemical injection to the flare was increased. There were three exceedances of the flare 3-hr H₂S limit.

SPPRC believes these periods to be exempt under SSM provisions of the regulations and is providing the data for informational purposes only.

| Periods Over 162 ppm H ₂ S, 3-hour Avg. | Date and End Time | Measured 3- Hour Avg. (ppm H ₂ S) |
|--|-------------------|--|
| 1 | 12/18/16, 06:00 | 496 |
| 2 | 12/18/16, 07:00 | 609 |
| 3 | 12/18/16, 08:00 | 627 |

Incident H (43542/43543) - FCC CO Exceedance Due to Equipment Malfunction

On December 18, 2016, the Elliott compressor tripped multiple times, due to low inlet air temperature. The unit was stabilized and preparations were made to complete freeing up the air lances to the catalyst cooler per the procedure. Starting on night shift of December 18th, the operators were working to unplug the catalyst cooler and reestablish air flow. Multiple attempts were made to break free the air lances and establish circulation in the catalyst cooler. Once unplugged, the actions resulted not only unplugging the connection the operators were working on, but also the other lance; causing high volumes of catalyst to be circulated back into the regenerator. This catalyst that had been stagnant in the catalyst cooler increased the amount of coke that was available within the regenerator and caused all of the oxygen being fed to the regenerator to be consumed. With oxygen concentrations falling, CO generation occurred. The board operator increased both blower air and enriched oxygen air flow, while cutting unit rate, quickly restoring combustion and CO generation back to normal levels. The catalyst cooler air flow was also able to be maintained and lances free of further plugging.

Since measured CO data points are not verifiable or accurate when 50% greater than the high calibration gas concentration, a value of 1,332.0 ppm (1.5 times the daily span calibration gas concentration of 888.0 ppm CO) was substituted for all greater data points. The recalculated and verifiable value is provided in the last column of the table.

| Periods Over 500 ppm CO @ 0% O ₂ 1- hour Avg. | Date and End Time | Measured 1-Hour Avg. (ppm CO) | Verified 1- hour Avg. (ppm CO) | O₂Rates, volume % |
|---|-------------------|-------------------------------|--------------------------------------|----------------------|
| 1 | 12/18/16, 23:00 | 561 | 380 | ≥ 1.0 |

SARA Reportable Release Summary

There were no SARA reportable releases during 4th quarter 2016.

SBC/BWON Vent Gas System

During the 4th quarter of 2016, BWON vent gasses were bypassed around the WWTP TO and associated temperature monitor 6.1% percent of the time or 134 hours. The WWTP TO was shut down on 1/11/17 for troubleshooting and investigation by a team consisting of representatives from Operations, Instrumentation, and Technical Services. The cause for the multiple trips in 4QTR2016 was not readily identified. An external 3rd party will be used to continue troubleshooting efforts related to the TO, identify the cause of the trips, and recommend corrective actions.

With the upgrade of the WWTP in July 2014, SBC's are no longer in-use.

Monitor Bypass Summary

There were no monitor bypasses during the 4th quarter 2016.

. SRU Bypass Summary

There were no SRU bypasses during the 4th quarter 2016.

Section 3 Excess Emissions and CEM Reporting Forms

| 4 th Quarter 2016 - Percent Excess Emissions and CEM | Downtime Summary | |
|--|---|-----------------------|
| Course Decedellar | Excess Emission Percent Time Exceeded This | Downtime Percent This |
| Source Description | Quarter (1) | Quarter (2,3) |
| Refinery Fuel Gas Drum (H2S ppmv, 3-hr rolling ave) | 0.00% | 3.85% |
| Refinery Fuel Gas Drum (H2S ppmv, 365-day rolling ave) | 0.00% | 3.85% |
| Heater 28-B-1 (1b SO2/mmbtu, 3 hr average) Heater 28-B-1 (1b SO2/hr, 3 hr average) | 0.00% | / |
| Heater 28-B-1 fuel gas flow meter | 0.001 | 0.005 |
| Heater 28-B-1 fuel oil flow meter | | 0.00% |
| FCC Opacity | 0.00% | 0.50% |
| FCC CO (ppm) | 0.23% | 0.50% |
| FCC NOx (ppm - 365 day rolling average) | 0.00% | 0.50% |
| FCC NOx (ppm - 7 day rolling average) | 0.00% | 0.50% |
| FCC SO2 (ppm - 7 day rolling average) | 0.00% | 0.50¥ |
| FCC SO2 (ppm - 365 day rolling average) | 0.00% | 0.50% |
| FCC SO2 (lb/hr) | 0.00% | 0.50% |
| FCC SOx (1b/1000 1b coke burn) | 0.00% | 0.50% |
| Heater 5-B-1 (lbs SO2/hr, 3-hr rolling ave) | 0.00% | |
| Heater 5-B-1 (lbs SO2/mmbtu, 3-hr rolling ave) | 0.001 | |
| Heater 5-B-1 fuel gas flow meter Heater 5-B-1 fuel oil flow meter | #T | _0.00% |
| Heater 2-B-3 (lbs SO2/hr, 3-hr rolling ave) | 0.00% | 0.00% |
| Heater 2-B-3 (lbs SO2/mmbtu, 3-hr rolling ave) | 0.00% | 0.00% |
| Heater 2-B-3 (lbs NOx/mmbtu, 3-hr rolling ave) | 0.00% | 0,294 |
| Heater 2-B-3 (lbs NOx/mmbtu, 12-Month rolling ave) | 0.00% | 0.29% |
| Heater 2-B-3 NSP fuel gas flow meter | | 0.00% |
| Heater 2-B-3 Fuel Gas flow meter | | 0.00% |
| Heater 2-B-3 NOX/O2 CEM | | 0.29% |
| Heater 1-B-5 (lbs SO2/hr, 3-hr rolling ave) | 0.00% | |
| Heater 1-B-5 (lbs 802/mmbtu, 3-hr rolling ave) | 0.00% | |
| Heater 1-B-5 fuel gas flow meter | | 0.00% |
| Heater 1-B-7 (lbs SO2/hr, 3-hr rolling ave) | 0.0ò# | ,, 11. |
| Heater 1-B-7 (lbs SO2/mmbtu, 3-hr rolling ave) | 0.00% | |
| Heater 1-B-7 fuel gas flow meter | | 0.00* |
| Heater 1-B-7 fuel oil flow meter | | 0.00% |
| Heater 29-B-1/29-B-2 (lbs SO2/hr, 3-hr rolling ave) Heater 29-B-1/29-B-2 (lbs SO2/mmbtu, 3-hr rolling ave) | 0.00% 0.00% | · • |
| Heater 29-B-1/29-B-2 fuel gas flow meter | 0.00* | 0.00% |
| Heater 3-B-1/2/3 (lbs SO2/hr, 3-hr rolling ave) | 0.00% | |
| Heater 3-B-1/2/3 (lbs SO2/mmbtu, 3-hr rolling ave) | 0.00% | |
| Heater 3-B-1/2/3 fuel gas flow meter | | 0.00% |
| Heater 3-B-4 (lbs SO2/hr, 3-hr rolling ave) | 0.00% | |
| Heater 3-B-4 (lbs SO2/mmbtu, 3-hr rolling ave) | 0.00% | , |
| Heater 3-B-4 fuel gas flow meter | | 0.00% |
| Heater 3-B-7 (lbs SO2/hr, 3-hr rolling ave) | 0,00% | |
| Heater 3-B-7 (lbs SO2/mmbtu, 3-hr rolling ave) | 0.00% | |
| Heater 3-B-7 fuel gas flow meter | | 0.00% |
| Heater 3-B-8 (lbs SO2/hr, 3-hr rolling ave) | 0.00% | .* 7.7 |
| Heater 3-B-8 (lbs SO2/mmbtu, 3-hr rolling ave) | 0.00% | |
| Heater 3-B-8 fuel gas flow meter | | 0.00% |
| Heater 34-B-1 (lbs SO2/hr, 3-hr rolling ave) | 0.00% | *** |
| Heater 34-B-1 (lbs SO2/mmbtu, 3-hr rolling ave) | 0.00% | |
| Heater 34-B-1 fuel gas flow meter | | 0.00% |
| Heater 34-B-2 (1bs SO2/hr, 3-hr rolling ave) | 0.001 | |
| Heater 34-B-2 (1bs SO2/mmbtu, 3-hr rolling ave) | 0.00% | |
| Heater 34-B-2 fuel gas flow meter Heater 34-B-2 fuel gas flow meter | | 0.00% |
| Heater 32-B-1 (lbs SO2/hr, 3-hr rolling ave) | 0.00% | |
| Heater 32-B-1 (lbs SO2/mmbtu, 3-hr rolling ave) | 0.00% | |
| Heater 32-B-1 fuel gas flow meter | | 3.26% |
| Heater 32-B-1 (NOx lb/mmbtu, 365 day rolling ave) | 0.00% | 3.26% |
| Heater 10-B-1 (1bs SO2/hr, 3-hr rolling ave) | 0.00% | + - |
| Heater 10-8-1 (lbs SO2/mmbtu, 3-hr rolling ave) | 0.00% | |
| Heater 10-B-1 fuel gas flow meter | | 0.00% |
| Heater 10-B-1 fuel oil flow meter | *** | 0.00% |

| 4 th Quarter 2016 - Percent Excess Emissions and CEM | Downtime Summary | |
|--|--|--|
| Source Description | Excess Emission Percent Time Exceeded This Quarter (1) | Continuous Monitor Downtime Percent This Quarter (2,3) |
| #2 SRU/SCOT SO2/O2 (ppmv, 12-hr ave) | 0.00% | 0.06% |
| #2 SRU/SCOT SO2/O2 (lbs/hr, 1-hr ave) | 0.00% | 0.06% |
| #2 SRU/SCOT SO2/O2 (lbs/hr, 3-hr rolling ave) | 0.00% | 0.06% |
| #2 SRU/SCOT bypasses | 0.00% | |
| Heater 36-B-1 (lbs SO2/hr, 3-hr rolling ave) | 0.00% | ••• |
| Heater 36-B-1 (1bs SO2/mmbtu, 3-hr rolling ave) Heater 36-B-1 fuel gas flow meter | 0.00% | 0.00% |
| Heater 36-B-2, 3, and 4 (lbs SO2/hr, 3-hr rolling ave) | 0.00% | 0.000 |
| Heater 36-B-2, 3, and 4 (1bs SO2/mmbtu, 3-hr rolling ave) | 0.00% | |
| Heater 36-B-2, 3, and 4 fuel gas flow meter | | 0.00% |
| Heater 36-B-6E (lbs SO2/hr, 3-hr rolling ave) | 0.00% | ••• |
| Heater 36-B-6E (1bs SO2/mmbtu, 3-hr rolling ave) | 0.00% | |
| Heater 36-B-6E fuel gas flow meter Heater 36-B-6W (1bs SO2/hr, 3-hr rolling ave) | 0.00% | 0.001 |
| Heater 36-B-6W (1bs SO2/mmbtu, 3-hr rolling ave) | 0.00% | |
| Heater 36-B-6W fuel gas flow meter | | 0.00% |
| Heater 37-B-1 (lbs SO2/hr, 3-hr rolling ave) | 0.00% | ••• |
| Heater 37-B-1 (lbs SO2/mmbtu, 3-hr rolling ave) | 0.00% | |
| Heater 37-B-1 fuel gas flow meter | | 0.00% |
| Heater 37-B-2 (lbs SO2/hr, 3-hr rolling ave) | 0.00% | |
| Heater 37-B-2 (lbs SO2/mmbtu, 3-hr rolling ave) Heater 37-B-2 fuel gas flow meter | 0.00% | 0.00% |
| Heaters 38-B-1, 38-B-2 (1b SO2/hr, 3-hr rolling ave) | 0.00% | |
| Heaters 38-B-1, 38-B-2 (1b SO2/mmbtu, 3-hr rolling ave) | 0.00% | |
| Heaters 38-B-1, 38-B-2 NSP Gas flow meter | | 0.00% |
| Heaters 38-B-1, 38-B-2 PSA fuel gas flow meter | | 0.00% |
| Light oil loadrack VRU (TOC ppmv, 6-hr_average) Light oil loadrack- Permanent VCU (Limit = Temp 2215 deg F, 3-hr rolling ave) | 0.00% | 0.00% |
| Refinery flare (presence of pilots) | 0.00% | 0.11% |
| Refinery flare (MMSCF/24-hours) | 0.00% | 0.00% |
| Refinery flare - SARA Reportable emissions - SO2 | 0.00% | 1.00% |
| Refinery flare - SARA Reportable emissions - NOx | 0.00% | |
| Refinery flare - H2S (3-hour rolling average) | 0.54% | 4.98 |
| W.W.T.P. SBC Offgas (H2S ppmv, 365-day rolling ave) W.W.T.P. Thermal Oxidizer, SBC Offgas (Temp Deg. F, 3-hr rolling ave) | 0.00% | 0.00% |
| W.W.T.P. Thermal Oxidizer, NESHAP Offgas (Temp Deg. F. 3-hr rolling ave) | 0.00% | 0.00% |
| #3 SRU/SCOT SO2/O2 (ppmv, 12-hr ave) | 0.00% | 0.14% |
| #3 SRU/SCOT SO2/O2 (lbs/hr, 1-hr ave) | 0.00% | 0.14% |
| #3 SRU/SCOT SO2/O2 (lbs/hr, 3-hr rolling ave) | 0.00% | 0.14% |
| #3 SRU/SCOT Bypasses | 0.00% | *** |
| NP VEPR Phase 1 - Catalytic AB w/Heat Exchg (Temp, 3-hr rolling ave) | 0.00% | 0.00% |
| NP VEPR Phase 2 - Catalytic AB w/Heat Exchg (Temp, 3-hr rolling ave) Boiler 7 NOx (lb/MMBtu, 30 day rolling ave) | 0.00% | 0.00% |
| Boiler 7 SO2 (lb/MMBtu, 3-hr rolling ave) | 0.00% | 0.144 |
| Boiler 7 fuel gas flow meter | *** | 0.00% |
| Boiler 8 NOx (lb/MMBtu, 30 day rolling ave) | 0.00% | 0.15% |
| Boiler 8 SO2 (lb/MMBtu, 3-hr rolling ave) | 0.00% | |
| Boiler 8 fuel gas flow meter | | 0.00₺ |
| Heater 8-B-1 (1b SO2/mmbtu, 3-hr average) | 0.00% | |
| Heater 8-B-1 (1b SO2/hr, 3-hr average) Heater 8-B-1 (ppmvd, 30-day average) | 0.00% | 0.23* |
| Heater 8-B-1 fuel gas flow meter | | 0.00% |
| GP 032 CO (TPY, Combined 12-month Rolling Sum) | 0.00% | *** |
| Boiler 7 CO (TPY, Combined 12-month Rolling Sum w/ Boiler 8) | | 0.14% |
| Boiler 8 CO (TPY, Combined 12-month Rolling Sum w/ Boiler 7) | | 0.15% |
| GP 032 NOx (TPY, Combined 12-month Rolling Sum) | 0.00% | |
| Boiler 7 NOx (TPY, Combined 12-month Rolling Sum w/ Boiler 8) | | 0.14% |
| Boiler B NOx (TPY, Combined 12-month Rolling Sum w/ Boiler 7) | | 0.15% |
| Notes: | ! | |
| (1) 0.00% indicates No Excess Emissions. | İ | |
| (2) Monitor Downtime includes daily calibration checks for opacity. | i | |
| (3) 0.00% indicates No Monitor Downtime. | <u> </u> | |

Appendix A AMP Monitoring Data

| nit me | Code Name | Sample ID | Sample Date | Sample Time | Total sulfur-Antek | lasteur 1* | Vol H2S | W-1186 | H2S C |
|-----------|--------------------------------------|--------------------------|--------------------------|--------------|--------------------|--------------------|------------|----------------------------|-------|
| CC | C3/C4 SPLTR OVHD | S2132019.D | 10/6/2016 | 4:30 | (ppmw) 1.7 | Instrument ID | | Vol LPG | (ppm |
| CC | C3/C4 SPLTR OVHD | S2132301.D | 10/5/2016 | 4:30 | 0.5 | Antek#2 Antek#1 | 1.2 0.4 | 575,259.115 575,259.610 | 2.1 |
| cc i | C3/C4 SPLTR OVHD | 52133008.0 | 10/10/2016 | 4:30 | 1.2 | Antek#1 | 0.9 | 575,259.810 | 1.5 |
| c | C3/C4 SPLTR OVHD | S2133284.D | 10/11/2016 | 4:30 | 0.6 | Antek#1 | 0.4 | 575,259.569 | 0.1 |
| ic i | C3/C4 SPLTR OVHD | \$2133548.D | 10/12/2016 | 4:30 | 1.9 | Antek#2 | 1.4 | 575,259.032 | 2. |
| C | C3/C4 SPLTR OVHD | S2133809.D | 10/13/2016 | 4:30 | 1.7 | Antek#2 | 1.2 | 575,259.115 | 2. |
| :С | C3/C4 SPLTR OVHD | 52134063.D | 10/14/2016 | 4:30 | 1.7 | Antek#2 | 1.2 | 575,259.115 | 2. |
| c | C3/C4 SPLTR OVHD | S2134737.D | 10/17/2016 | 4:30 | 1.7 | Antek#2 | 1.2 | 575,259.135 | 2. |
| c l | C3/C4 SPLTR OVHD | 52135017.D | 10/18/2016 | 4:30 | 1.7 | Antek#2 | 1.2 | 575,259,131 | 2. |
| c l | C3/C4 SPLTR OVHD | S2135289.D | 10/19/2016 | 4:30 | 0.5 | Antek#1 | 0.4 | 575,259.598 | 0. |
| cc I | C3/C4 SPLTR OVHD | S2135553.D | 10/20/2016 | 4:30 | 1.7 | Antek#2 | 1.2 | 575,259.127 | 2 |
| c | C3/C4 SPLTR OVHD | \$2135809.D | 10/21/2016 | 4:30 | 1.7 | Antek#2 | 1.2 | 575,259.102 | 2 |
| cc c | C3/C4 SPLTR OVHD | S2136572.D | 10/24/2016 | 4:30 | 1.0 | Antek#1 | 0.7 | 575,259.420 | 1. |
| C. | C3/C4 SPLTR OVHD | S2136829.D | 10/25/2016 | 4:30 | 1.7 | Antek#2 | 1.2 | 575,259.119 | 2. |
| C, | C3/C4 SPLTR OVHD | 52137114.D | 10/26/2016 | 4:30 | 0.9 | Antek#1 | 0.7 | 575,259.441 | 1. |
| ic j | C3/C4 SPLTR OVHD | 52137413.D | 10/27/2016 | 4:30 | 0.8 | Antek#1 | 0.6 | 575,259.486 | 1. |
| c | C3/C4 SPLTR OVHD | S2137682.D | 10/28/2016 | 4:30 | 1.7 | Antek#2 | 1.2 | 575,259.119 | 2. |
| Ċ. | C3/C4 SPLTR OVHD | S2138434.D | 10/31/2016 | 4:30 | 0.8 | Antek#1 | 0.6 | 575,259.470 | 1. |
| ic | C3/C4 SPLTR OVHD | S2138717.D | 11/1/2016 | 4:30 | 1.0 | Antek#1 | 0.7 | 575,259.408 | 1. |
| C | C3/C4 SPLTR OVHD | \$2138985.D | 11/2/2016 | 4:30 | 0.9 | Antek#1 | 0.7 | 575,259.441 | 1, |
| c | C3/C4 SPLTR OVHD | S2139262.D | 11/3/2016 | 4:30 | 0.6 | Antek#1 | 0.4 | 575,259.561 | 0. |
| :c | C3/C4 SPLTR OVHD | S2139514.D | 11/4/2016 | 4:30 | 0.5 | Antek#1 | 0.4 | 575,259.594 | 0. |
| x | C3/C4 SPLTR OVHD | S2140271.D | 11/7/2016 | 4:30 | 0.3 | Antek#2 | 0.2 | 575,259.689 |) O. |
| c | C3/C4 SPLTR OVHD | \$2140537.D | 11/8/2016 | 4:30 | 0.4 | Antek#2 | 0.3 | 575,259. 664 | 0. |
| c | C3/C4 SPLTR OVHD | S2140837.D | 11/9/2016 | 4:30 | 0.4 | Antek#2 | 0.3 | 575,259.664 | 0. |
| c | C3/C4 SPLTR OVHD | \$2141129.D | 11/10/2016 | 4:30 | 0.6 | Antek#1 | 0.4 | 575,259.569 | 0. |
| C | C3/C4 SPLTR OVHD | \$2141384.D | 11/11/2016 | 4:30 | 0.6 | Antek#1 | 0.4 | 575,259.573 | 0. |
| C | C3/C4 SPLTR OVHD | S2142082.D | 11/14/2016 | 4:30 | 0.6 | Antek#1 | 0.4 | 575,259.573 | 0. |
| c ¦ | C3/C4 SPLTR OVHD | S2142331.D | 11/15/2016 | 4:30 | 0.4 | Antek#2 | 0.3 | 575,259.656 | 0. |
| C | C3/C4 SPLTR OVHD | S2142580.D | 11/16/2016 | 4:30 | 0.5 | Antek#2 | 0,4 | 575,259.614 | 0. |
| c | C3/C4 SPLTR OVHD | S2142853.D | 11/17/2016 | 4:30 | 1.0 | Antek#1 | 0.7 | 575,259.391 | 1. |
| C | C3/C4 SPLTR OVHD | S2143119.D S2143832.D | 11/18/2016 | 4:30 | 0.5 | Antek#2 | 0.3 | 575,259.627 | 0. |
| C C | C3/C4 SPLTR OVHD C3/C4 SPLTR OVHD | \$2144069.D | 11/21/2016 11/22/2016 | 4:30 4:30 | 0.8 0.7 | Antek#1 | 0.6 | 575,259.494 | 1. |
| ic l | C3/C4 SPLTR OVHD | \$2144349.D | 11/23/2016 | 4:30 | 0.7 | Antek#1 | 0.5 | 575,259.511 | 0. |
| Σĺ | C3/C4 SPLTR OVHD | S2144614.D | 11/24/2016 | 4:30 | 0.6 | Antek#1 Antek#2 | 0.4 0.5 | 575,259.585 | 0 |
| c | C3/C4 SPLTR OVHD | S2144885.D | 11/25/2016 | 4:30 | 0.5 | Antek#1 | 0.5 | 575,259.548 | 0. |
| c | C3/C4 SPETR OVHD | 52145600.D | 11/23/2016 | 4:30 | 0.5 | Antek#1 | 0.4 | 575,259.610 575,259.594 | 0. |
| č | C3/C4 SPLTR OVHD | \$2145853.D | 11/29/2016 | 4:30 | 0.5 | Antek#1 | 0.4 | 575,259.610 | 0 |
| č l | C3/C4 SPETR OVHD | S2146103.D | 11/30/2016 | 4:30 | 0.6 | Antek#1 | 0.4 | 575,259.585 | 0 |
| c l | C3/C4 SPLTR OVHD | 52146374.D | 12/1/2016 | 4:30 | 0.7 | Antek#2 | 1 0.5 | 575,259,544 | 0. |
| c | C3/C4 SPLTR OVHO | 52146630.D | 12/2/2016 | 4:30 | 0.6 | Antek#2 | 0.5 | 575,259,552 | 0. |
| c] | C3/C4 SPLTR OVHD | 52147384.D | 12/5/2016 | 4:30 | 0.7 | Antek#2 | 0.5 | 575,259.523 | 0. |
| c | C3/C4 SPLTR OVHD | S2147630.D | 12/6/2016 | 4:30 | 0.5 | Antek#1 | 0.4 | 575,259.594 | 0. |
| c | C3/C4 SPLTR OVHD | S2147897.D | 12/7/2016 | 4:30 | 0.5 | Antek#1 | 0.4 | 575,259.602 | 0 |
| c | C3/C4 SPLTR OVHD | \$2148158.D | 12/8/2016 | 4:30 | 1.1 | Antek#2 | 0.8 | 575,259.354 | 1 1 |
| - I | C3/C4 SPLTR OVHD | \$2148417.0 | 12/9/2016 | 4:30 | 0.5 | Antek#1 | 0.4 | 575,259.610 | 0 |
| c | C3/C4 SPLTR OVHD | 52149094.D | 12/12/2016 | 4:30 | 0.9 | Antek#2 | 0.7 | 575,259.437 | 1 |
| c | C3/C4 SPLTR OVHD | 52149353.D | 12/13/2016 | 4:30 | 0.7 | Antek#1 | 0.5 | 575,259.519 | , 0. |
| c | C3/C4 SPLTR OVHD | \$2149609.D | 12/14/2016 | 4:30 | 1.3 | Antek#2 | 0.9 | 575,259.296 | 1 |
| c | C3/C4 SPLTR OVHD | S2149864.D | 12/15/2016 | 4:30 | 0.9 | Antek#2 | 0.6 | 575,259.445 | 1 |
| ç | C3/C4 SPLTR OVHD | 52150178.D | 12/16/2016 | 4:30 | 1.2 | Antek#2 | 0.9 | 575,259.305 | 1 |
| c | C3/C4 SPLTR OVHD | \$2150903.D | 12/19/2016 | 4:30 | 0.8 | Antek#1 | 0.6 | 575,259.490 | 1 |
| c | C3/C4 SPLTR QVHD | SZ151158.D | 12/20/2016 | 4:30 | 1.0 | Antek#2 | 0.7 | 575,259.399 | 1. |
| ۱ ء | C3/C4 SPLTR OVHD | \$2151415.D | 12/21/2016 | 4:30 | 0.6 | Antek#1 | 0.4 | 575,259.561 | 0. |
| c | C3/C4 SPLTR OVHD | S2151676.D | 12/22/2016 | 4:30 | 1.4 | Antek#2 | 1.0 | 575,259.222 | |
| c | C3/C4 SPLTR OVHD | \$2151930.D | 12/23/2016 | 4:30 | 0.8 | Antek#1 | 0.6 | 575,259,499 | 1 1 |
| c i | C3/C4 SPLTR OVHD | \$2152644.D | 12/26/2016 | 4:30 | 1.3 | Antek#1 | 0.9 | 575,259.292 | |
| c | C3/C4 SPLTR OVHD | \$2152871.D | 12/27/2016 | 4:30 | 1.2 | Antek#2 | 0.8 | 575,259.329 | 1 |
| c | C3/C4 SPLTR OVHD | \$2153133.D | 12/28/2016 | 4:30 | 1.0 | Antek#2 | 0.7 | 575,259.420 | 1 1 |
| c | C3/C4 SPLTR OVHD | S2153404.D | 12/29/2016 | 4:30 | 0.6 | Antek#1 | 0.4 | 575,259.573 | , 0 |
| c | C3/C4 SPLTR OVHD | S2153659.D | 12/30/2016 | 4:30 | 1.3 | Antek#2 | 0.9 | 575,259.292 | . 1 |
| - | • • • • • • | | - • | 1 | | | | | - |

| | | | oint #2 - FCC Comb | | | | | | |
|------------|--|----------------------------|--------------------------|--------------|--------------|----------------------|----------------|----------------------------|------------|
| Unit | N/I | nat rake at least of | one sample semi-ann | Sample | sulfur-Antek | monins between sar | npies ! | • | H2S Conc |
| Name | Code Name | Sample ID | Sample Date | Time | (ppmw) | Instrument ID | Vol H2S | Vol LPG | (ppmv) |
| FCC | COMBINED PROPANE | \$2131178.D | 10/3/2016 | 4:30 | 12.9 | Antek#2 | 9.3 | 554,647.118 | 16.7 |
| (| COMBINED PROPANE | , , | 10/4/2016 | 4:30 | 1.7 | Antek#2 | 1.2 | 554,653.330 | 2.2 |
| FCC | COMBINED PROPANE | [I | 10/5/2016 | 4:30 | 1.8 | Antek#2 | 1.3 | 554,653.275 | 2.3 |
| FCC | COMBINED PROPANE | | 10/6/2016 10/7/2016 | 4:30 4:30 | 1.9 0.9 | Antek#2 Antek#1 | 1.4 | 554,653.220 554,653.774 | 2.5 1.2 |
| FCC | COMBINED PROPANE | 1 | 10/10/2016 | 4:30 | 1.8 | Antek#2 | 1.3 | 554,653.275 | 2.3 |
| FCC | COMBINED PROPANE | , , | 10/11/2016 | 4:30 | 0.9 | Antek#1 | 0,6 | 554,653.774 | 1.2 |
| FCC | COMBINED PROPANE | 1 1 | 10/12/2016 | 4:30 | 0.8 | Antek#1 | 0,6 | 554,653.830 | 1.0 |
| FCC | COMBINED PROPANE | S2133804.D | 10/13/2016 | 4:30 | 0.9 | Antek#1 | 0.6 | 554,653.774 | 1.2 |
| FCC | COMBINED PROPANE | , , | 10/14/2016 | 4:30 | 1.8 | Antek#2 | 1.3 | 554,653.275 | 2.3 |
| , | COMBINED PROPANE | | 10/17/2016 | 4:30 | 1.7 | Antek#2 | 1.2 | 554,653.336 | 2.2 |
| | COMBINED PROPANE | , | 10/18/2016 | 4:30 | 1.7 | Antek#2 | 1.2 | 554,653.336 | 2.2 |
| FCC FCC | COMBINED PROPANE | 1 | 10/19/2016 10/20/2016 | 4:30 4:30 | 1.7 0.5 | Antek#2 Antek#1 | 1.2 0.3 | 554,653,314 554,654.018 | 2.2 0.6 |
| | COMBINED PROPANE | 1 | 10/21/2016 | 21:17 | 4.4 | Antek#2 | 3.1 | 554,651.844 | 5.7 |
| | COMBINED PROPANE | | 10/21/2016 | 4:30 | 0.9 | Antek#1 | 0.7 | 554,653,752 | 1.2 |
| FCC | COMBINED PROPANE | l . | 10/24/2016 | 4:30 | 2.8 | Antek#2 | 2.0 | 554,652.720 | 3.6 |
| | COMBINED PROPANE | S2136824.D | 10/25/2016 | 4:30 | 2.3 | Antek#2 | 1.7 | 554,652.976 | 3.0 |
| FCC | COMBINED PROPANE | | 10/26/2016 | 4:30 | 1.9 | Antek#1 | 1.4 | 554,653.197 | 2.5 |
| | COMBINED PROPANE | \$2137408.D | 10/27/2016 | 4:30 | 1.9 | Antek#1 | 1.4 | 554,653.225 | 2.4 |
| 1 | COMBINED PROPANE | S2137678.D S2138430.D | 10/28/2016 | 4:30 | 2.4 | Antek#1 | 1.7 | 554,652.948 | 3.1 |
| | COMBINED PROPANE | S2138430.D | 10/31/2016 11/2/2016 | 4:30 4:30 | 3.2 | Antek#2 Antek#1 | 2.3 1.5 | 554,652.476 554,653.109 | 4.2 2.7 |
| | COMBINED PROPANE | \$2138981.D | 11/3/2016 | 4:30 | 2.1 3.8 | Antek#1 | 2.7 | 554,652.149 | 5.0 |
| | COMBINED PROPANE | | 11/4/2016 | 4:30 | 3.2 | Antek#1 | 2.3 | 554,652.482 | 4.2 |
| | COMBINED PROPANE | S2140267.D | 11/7/2016 | 4:30 | 3.4 | Antek#1 | 2.4 | 554,652.404 | 4.4 |
| | COMBINED PROPANE | \$2140532.D | 11/8/2016 | 4:30 | 4.0 | Antek#2 | 2.8 | 554,652.083 | 5.1 |
| | COMBINED PROPANE | \$2140833.D | 11/9/2016 | 4:30 | 4.0 | Antek#2 | 2.9 | 554,652.071 | 5,1 |
| | COMBINED PROPANE | S2141124.D | 11/10/2016 | 4:30 | 3.7 | Antek#1 | 2.7 | 554,652.199 | 4.8 |
| | COMBINED PROPANE | S2141380.D | 11/11/2016 | 4:30 | 4.1 | Antek#2 | 2.9 | 554,651.999 | 5.3 |
| | COMBINED PROPANE | \$2142078.D \$2142326.D | 11/14/2016 11/15/2016 | 4:30 4:30 | 3.6 4.0 | Antek#2 Antek#2 | , 2.6 , 2.9 | 554,652.282 554,652.060 | 4.6 5.2 |
| r | COMBINED PROPANE | \$2142576.D | 11/16/2016 | 4:30 | 9.9 | Antek#2 | 7.1 | 554,648.810 | 12.7 |
| | COMBINED PROPANE | S2142848.D | 11/17/2016 | 4:30 | 9.2 | Antek#2 | 6.6 | 554,649.176 | 11.9 |
| | COMBINED PROPANE | S2143115.D | 11/18/2016 | 4:30 | 7.0 | Antek#1 | 5.1 | 554,650.369 | 9.1 |
| FCC | COMBINED PROPANE | S2143828.D | 11/21/2016 | 4:30 | 4.0 | Antek#1 | 2.9 | 554,652.044 | 5.2 |
| | COMBINED PROPANE | S2144064.D | 11/22/2016 | 4:30 | 2.9 | Antek#2 | 2.1 | 554,652.682 | 3.7 |
| | COMBINED PROPANE | S2144345.D | 11/23/2016 | 4:30 | 3.2 | Antek#1 | 2.3 | 554,652.504 | 4.1 |
| , | COMBINED PROPANE | S2144609.D | 11/24/2016 | 4:30 | 2.9 | Antek#2 | 2.1 | 554,652,643 | 3.8 |
| - 1 | COMBINED PROPANE | S2144881.D S2145596.D | 11/25/2016 11/28/2016 | 4:30 4:30 | 2.1 3.3 | Antek#1 Antek#1 | 1.5 2.4 | 554,653.125 554,652.421 | 2.7 4.3 |
| | | i i | 11/29/2016 | 4:30 | 2.9 | Antek#1 | 2.4 | 554,652.659 | 3.8 |
| | COMBINED PROPANE | ! | 11/30/2016 | 4:30 | 3.6 | Antek#1 | 2.6 | 554,652.254 | 4.7 |
| | COMBINED PROPANE | | 12/1/2016 | 4:30 | 2.4 | Antek#1 | 1.7 | 554,652.931 | 3.1 |
| | COMBINED PROPANE | \$2146626.D | 12/2/2016 | 4:30 | 3.7 | Antek#2 | 2.7 | 554,652.210 | 4.8 |
| | COMBINED PROPANE | S2147380.D | 12/5/2016 | 4:30 | 2.1 | Antek#2 | 1.5 | 554,653.120 | 2.7 |
| 1 | COMBINED PROPANE | | 12/6/2016 | 4:30 | 0.5 | Antek#1 | 0.3 | 554,654.018 | 0.6 |
| | COMBINED PROPANE | | 12/7/2016 | 4:30 | 0.5 | Antek#1 | 0.3 | 554,654.024 | 0.6 |
| | COMBINED PROPANE | | 12/8/2016 | 4:30 | 2.7 | Antek#1 | 2.0 | 554,652,759 | 3.5 |
| | COMBINED PROPANE COMBINED PROPANE | | 12/12/2016 12/13/2016 | 4:30 4:30 | 2.8 2.7 | Antek#2 Antek#2 | 2.0 | 554,652.709 554,652.765 | 3.6 3.5 |
| | COMBINED PROPANE | , | 12/14/2016 | 4:30 | 2.7 | Antek#1 | j 1.7 | , 554,652.942 | 3.5 |
| | COMBINED PROPANE | | 12/15/2016 | 4:30 | 2.4 | Antek#1 | 1.8 | 554,652,848 | |
| | COMBINED PROPANE | | 12/16/2016 | 4:30 | 4.8 | Antek#1 | 3.4 | 554,651.611 | 6.2 |
| FCC | COMBINED PROPANE | S2150899.D | 12/19/2016 | 4:30 | 8.7 | Antek#2 | 6.3 | 554,649.431 | • |
| | COMBINED PROPANE | | 12/20/2016 | 4:30 | 3.9 | Antek#1 | 2.8 | 554,652.088 | 5.1 |
| | COMBINED PROPANE | | 12/21/2016 | 4:30 | 3.4 | Antek#1 | 2.4 | 554,652.415 | 4.3 |
| | COMBINED PROPANE | | 12/22/2016 | 4:30 | 2.1 | Antek#2 | . 1.5 | 554,653.103 | 2.7 |
| | COMBINED PROPANE | | 12/23/2016 | 4:30 | 2.8 | Antek#2 | 2.0 | 554,652.737 | |
| | COMBINED PROPANE COMBINED PROPANE | | 12/26/2016 | 4:30 | 2.4 | Antek#2 | 1.7 | 554,652.937 | 3.1 |
| | COMBINED PROPANE | | 12/27/2016 12/28/2016 | 4:30 4:30 | 2.0 | i Antek#2 Antek#2 | 1.4 1.6 | 554,653.186 554,653.037 | 2.5 |
| | COMBINED PROPANE | | 12/29/2016 | . 4:30 | 2.2 | Antek#1 | 1.6 | 554,653.014 | 2.9 |
| F Lata | COMBINED FROM | | | | | | | | |

| | | at least one sample semi-ennu | | Sample | onths between sa total sulfur | İ | | H2S Co |
|------------------|-----------------------|-------------------------------|-------------|--------|----------------------------------|---------|-------------|--------|
| Unit Name | Code Name | Sample ID | Sample Date | Time | (ppmw) | Vol H2S | Vol LPG | (ppmv |
| CS/C6 ISOM PENEX | ISOM STRPR BTMS | 52134466_FID1_A.CDF | 10/15/2016 | 22:33 | 3.1 | 2.2 | 347,820.929 | 6.4 |
| CS/C6 ISOM PENEX | ISOM STRPR BTMS | \$2134462_FID1_A.CDF | 10/15/2016 | 20:39 | 3.1 | 2.3 | 347,820.915 | 6.5 |
| CS/C6 ISOM PENEX | ISOM STRPR BTMS | 52134459_FID1_A.CDF | 10/15/2016 | 19:07 | 3.1 | 2.2 | 347,820.919 | 6.5 |
| 25/C6 ISOM PENEX | ISOM STRPR BTM5 | ļ | 10/16/2016 | 22:22 | 0.2 | 0.1 | 347,821.948 | 0.4 |
| S/C6 ISOM PENEX | ISOM STRPR BTMS | \$2134679_FID1_A.CDF | 10/16/2016 | 8:46 | 0.5 | 0.3 | 347,821.851 | 0.9 |
| CS/C6 ISOM PENEX | ISOM STRPR BTMS | } | 10/16/2016 | 4:15 | 1.7 | 1.2 | 347,821.423 | 3.5 |
| :5/C6 ISOM PENEX | ISOM STRPR BTMS | Ì | 10/16/2016 | 1:49 | 3.1 | 2.2 | 347,820.929 | 6.4 |
| 5/C6 ISOM PENEX | ISOM STRPR BTMS | \$2134472_FID1_A.CDF | 10/16/2016 | 0:32 | 3.1 | 2.2 | 347,820.926 | 6.4 |
| S/C6 ISOM PENEX | ISOM STRPR BTMS | 52134981_FID1_A.CDF | 10/17/2016 | 22:00 | 0.1 | 0.1 | 347,821.969 | 0.2 |
| 5/C6 ISOM PENEX | ISOM STRPR BTMS | S21352S3_FID1_A.CDF | 10/18/2016 | 23:54 | 0.2 | 0.1 | 347,821.945 | 0.4 |
| 5/C6 ISOM PENEX | ISOM STRPR BTMS | 52135220_FID1_A.COF | 10/18/2016 | 12:24 | 0.1 | 0.1 | 347,821.969 | 0.2 |
| 5/C6 ISOM PENEX | ISOM STRPR BTMS | \$2135047_FID1_A.CDF | 10/18/2016 | 4:30 | 0.4 | | | t |
| 5/C6 ISOM PENEX | ISOM STRPR BTMS | | | | | 0.3 | 347,821.886 | 0.7 |
| - | - | \$2135331_FID1_A.CDF | 10/19/2016 | 4:30 | 0.1 | 0.1 | 347,821.969 | 0.2 |
| 5/C6 ISOM PENEX | ISOM STRPR BTMS | \$2135581_FID1_A.CDF | 10/20/2016 | 4:30 | 0.1 | 0.1 | 347,821.959 | 0.3 |
| 5/C6 ISOM PENEX | ISOM STRPR BTMS | S2136021_FID1_A.CDF | 10/21/2016 | 22:41 | 0.1 | 0.1 | 347,821.969 | 0.2 |
| 5/C6 ISOM PENEX | ISOM STRPR BTMS | 52135850_FID1_A.CDF | 10/21/2016 | 4:30 | 0.1 | 0.1 | 347,821.969 | 0.2 |
| 5/C6 ISOM PENEX | ISOM STRPR BTMS | \$2136283_FID1_A.CDF | 10/22/2016 | 22:13 | 0.1 | 0.1 | 347,821.969 | 1 0.2 |
| S/C6 ISOM PENEX | ISOM STRPR BTMS | S2136528_FID1_A.CDF | 10/23/2016 | 22:05 | 0.1 | 0.1 | 347,821.969 | . 0.2 |
| S/C6 ISOM PENEX | ISOM STRPR BTMS | \$2136612_FID1_A.CDF | 10/24/2016 | 4:30 | 0.1 | 0.1 | 347,821.969 | j 0.2 |
| S/C6 ISOM PENEX | ISOM STRPR BTMS | \$2137062_FID1_A.CDF | 10/25/2016 | 21:00 | 0.1 | 0.1 | 347,821.969 | j 0.2 |
| 5/C6 ISOM PENEX | ISOM STRPR BTMS | 52135859_FID1_A.CDF | 10/25/2016 | 4:30 | 0.1 | 0.1 | 347,821.969 | 0.2 |
| S/C6 ISOM PENEX | ISOM STRPR BTMS | 52137156_FID1_A.CDF | 10/25/2016 | 4:30 | 0.1 | 0.1 | 347,821.969 | 0.2 |
| S/C6 ISOM PENEX | ISOM STRPR BIMS | 52137723_FID1_A.COF | 10/28/2016 | 4:30 | 0.1 | 1 | | , |
| | | 1 | 10/31/2016 | 4:30 | | 0.1 | 347,821.969 | 0.2 |
| S/C6 ISOM PENEX | ISOM STRPR BTMS | S2138474_FID1_A.CDF | | 1 ! | 0.1 | 0.1 | 347,821.969 | 0.2 |
| S/C6 ISOM PENEX | ISOM STRPR BTMS | S2139027_FID1_A.CDF | 11/2/2018 | 4:30 | 0.0 | 0.0 | 347,822.000 | 0.0 |
| S/C6 ISOM PENEX | ISOM STRPR BTMS | S2139290_FID1_A.CDF | 11/3/2016 | 4:30 | 0.1 | 0.0 | 347,821.987 | 0.1 |
| 5/C6 ISOM PENEX | ISOM STRPR BTMS | \$2139555_FID1_A.CDF | 11/4/2016 | 4:30 | 0,1 | 0.1 | 347,821.983 | 0.1 |
| 5/C6 ISOM PENEX | ISOM STRPR BTMS | S2140311_FID1_A.CDF | 11/7/2016 | 4:30 | 0.2 | 0.1 | 347,821.945 | 0.4 |
| 5/C6 ISOM PENEX | ISOM STRPR BTMS | S2140567_FID1_A.CDF | 11/8/2016 | 4:30 | 0.0 | 0.0 | 347,821.993 | 0.2 |
| 5/C6 ISOM PENEX | ISOM STRPR BTMS | S2140879_FID1_A.CDF | 11/9/2016 | 4:30 | 0.1 | 0.1 | 347,821.983 | 0.1 |
| S/C6 ISOM PENEX | ISOM STRPR BTMS | S2141157_FID1_A CDF | 11/10/2016 | 4:30 | 0.1 | 0.1 | 347,821.966 | 0.2 |
| CO ISOM PENEX | ISOM STRPR BTMS | \$2141425_FID1_A.CDF | 11/11/2018 | 4:30 | 0.1 | 0.0 | 347,821.990 | 0.1 |
| C6 ISOM PENEX | ISOM STRPR BTMS | S2142381_FID1_A.CDF | 11/15/2018 | 4:30 | 4.0 | 2.9 | | 8.3 |
| C6 ISOM PENEX | ISOM STRPR BTMS | S2142799_FID1_A.CDF | 11/16/2016 | 18:36 | 0.1 | | 347,820.602 | |
| | | | 11/16/2016 | 1 1 | | 0.1 | 347,821.976 | 0.2 |
| C6 ISOM PENEX | ISOM STRPR BTM5 | S2142791_FID1_A.CDF | | 14:28 | 0.1 | 0.0 | 347,821.987 | 0.7 |
| 5/C6 ISOM PENEX | ISOM STRPR BTM5 | S2142784_FID1_A.CDF | 11/16/2018 | 12:49 | 0.1 | 0.0 | 347,821.987 | 0.1 |
| S/C6 ISOM PENEX | ISOM STRPR BTMS | S2142780_FID1_A.CDF | 11/16/2016 | 10:52 | 0.1 | 0.1 | 347,821.976 | 0.2 |
| 5/C6 ISOM PENEX | ISOM STRPR BTMS | \$2142622_FID1_A.CDF | 11/16/2016 | 4:30 | 0.1 | 0.0 | 347,821.987 | 0.1 |
| 5/C6 ISOM PENEX | ISOM STRPR BTMS | S2142881_FID1_A.CDF | 11/17/2016 | 4:30 | 0,1 | 0.0 | 347,821,990 | 0.1 |
| S/C6 ISOM PENEX | ISOM STRPR BTMS | S2143180_FID1_A.CDF | 11/18/2016 | 4:30 | 0.1 | 0.1 | 347,821.983 | 0.1 |
| 5/C6 ISOM PENEX | ISOM STRPR BTMS | S2143543_FID1_A.CDF | 11/19/2016 | 11:50 | 0.1 | 0.1 | 347,821.973 | 0.2 |
| 5/C6 ISOM PENEX | ISOM STRPR BTMS | S2143542_FID1_A.COF | 11/19/2016 | 10.30 | 0.3 | 0.2 | 347,821.920 | 0.5 |
| C6 ISOM PENEX | ISOM STRPR BTMS | S2143872_FID1_A CDF | 11/21/2016 | 4:30 | 0.6 | 0.5 | 347,821.785 | 1.3 |
| CG ISOM PENEX | ISOM STRPR BTMS | \$2144099_FID1_A.CDF | 11/22/2016 | 4:30 | 0.0 | 0.0 | 347,821.997 | 0.1 |
| /C6 ISOM PENEX | ISOM STRPR BTMS | S2144391_FID1_A.CDF | 11/23/2016 | 4:30 | 0.0 | 0.0 | 347,821.993 | 0.1 |
| C6 ISOM PENEX | ISOM STRPR BTMS | S2144838_FID1_A CDF | 11/24/2016 | 20:15 | 0.1 | | | |
| 1 | | | 11/24/2016 | 1 | | 0.0 | 347,821.987 | 0.1 |
| C6 ISOM PENEX | ISOM STRPR BTMS | S2144823_FID1_A.CDF | | 10:33 | 02 | 0.1 | 347,821.945 | , 0.4 |
| CG ISOM PENEX | ISOM STRPR BTMS | IS2144643_FID1_A.CDF | 11/24/2016 | 4:30 | 0.1 | 0.0 | 347,821.990 | 0.1 |
| C6 ISOM PENEX | ISOM STRPR BTMS | S2145084_FID1_A.CDF | 11/25/2016 | 15:07 | 0.0 | 0.0 | 347,821.993 | 0.1 |
| /C6 ISOM PENEX | ISOM STRPR BTMS | S2144926_FID1_A.CDF | 11/25/2016 | 4:30 | 0.1 | 0.0 | 347,821.990 | 0.1 |
| /C6 ISOM PENEX | ISOM STRPR BTMS | S2145640_FID1_A.CDF | 11/28/2016 | 4:30 | 0.1 | 0.0 | 347,821.990 | 0.1 |
| /C6 ISOM PENEX | ISOM STRPR BTMS | S2145884_FID1_A.CDF | 11/29/2016 | 4:30 | 0.1 | 0.1 | 347,821.983 | 0.1 |
| /C6 ISOM PENEX | ISOM STRPR BTMS | S2146145_FID1_A.CDF | 11/30/2016 | 4:30 | 0.0 | 0.0 | 347,821.993 | 0.1 |
| /C6 ISOM PENEX | ISOM STRPR BTMS | 52146671_FID1_A.CDF | 12/2/2016 | 4:30 | 0.0 | 0.0 | 347,822.007 | 0.0 |
| /C6 ISOM PENEX | ISOM STRPR BTMS | 52147424_FID1_A.CDF | 12/5/2016 | 4:30 | 0.0 | 0.0 | 347,822.007 | 0.0 |
| /C6 ISOM PENEX | ISOM STRPR BTMS | 52147424_FID1_A.CDF | | | | | | |
| /C6 ISOM PENEX | • | • | 12/6/2016 | 4:30 | 0.0 | 0.0 | 347,822.007 | , 0,0 |
| | ISOM STRPR BTMS | \$2147939_FID1_A.CDF | 12/7/2016 | 4:30 | 0.0 | 0.0 | 347,822.007 | • 0.0 |
| /C6 ISOM PENEX | ISOM STRPR BTMS | \$2148187_FID1_A.CDF | 12/8/2016 | 4:30 | 0.0 | 0.0 | 347,822.007 | 0.0 |
| /C6 ISOM PENEX | ISOM STRPR 8TMS | S2148458_FID1_A.CDF | 12/9/2016 | 4:30 | 0.0 | 0.0 | 347,822.004 | 0.0 |
| /C6 ISOM PENEX | ISOM STRPR BTM5 | S2149134_FID1_A.CDF | 12/12/2016 | 4:30 | 0.0 | 0.0 | 347,822,007 | 0.0 |
| /C6 ISOM PENEX . | ISOM STRPR BTMS | S2149384_FID1_A.CDF | 12/13/2016 | 4:30 | 0.0 | 0.0 | 347,822.007 | 0.0 |
| /C6 ISOM PENEX | ISOM STRPR 8TMS | S21496S1_FID1_A.CDF | 12/14/2016 | 4:30 | 0.0 | 0.0 | 347,822.007 | 0.0 |
| /C6 ISOM PENEX | ISOM STRPR BTMS | \$2149893_FID1_A.CDF | 12/15/2016 | 4:30 | 0.0 | 0.0 | 347,822.007 | 0.0 |
| C6 ISOM PENEX | ISOM STRPR BTMS | 52150219_FID1_A.CDF | 12/16/2016 | 4:30 | | • | 1 | |
| C6 ISOM PENEX | | | | | 0.0 | 0.0 | 347,822.007 | |
| | ISOM STRPR BTMS | \$2150850_FID1_A.CDF | 12/18/2016 | 16:35 | 0.4 | 0.3 | 347,821.861 | 0.9 |
| /C6 ISOM PENEX ' | ISOM STRPR BTMS | \$2150943_FID1_A.CDF | 12/19/2016 | 4:30 | 0.1 | 0.1 | 347,821.962 | 0.3 |
| /C6 ISOM PENEX | ISOM STRPR BTMS | \$2151353_FID1_A.CDF | 12/20/2016 | 12:38 | 0.0 | 0.0 | 347,822.007 | 0.0 |
| /C6 ISOM PENEX ! | ISOM STRPR BTMS | S2151189_FID1_A.CDF | 12/20/2016 | 4:30 | 0.0 | 0.0 | 347,822.007 | 0.0 |
| /C6 ISOM PENEX | ISOM STRPR BTMS | 52151457_FID1_A.CDF | 12/21/2016 | 4:30 | 0.0 | 0.0 | 347,822.007 | 0.0 |
| /C6 ISOM PENEX | ISOM STRPR BTMS | \$2151705_FID1_A.CDF | 12/22/2016 | 4:30 | 0.0 | 0.0 | 347,822.007 | 0.0 |
| /C6 ISOM PENEX | ISOM STRPR BTMS | \$2152117_FID1_A.CDF | 12/23/2016 | 10:18 | 0.0 | 0.0 | 347,822.007 | 0.0 |
| C6 ISOM PENEX | | | | | | * | | |
| | ISOM STRPR BTMS | \$2151971_FID1_A.CDF | 12/23/2016 | 4:30 | 0.3 | 0.2 | 347,821.913 | 0.6 |
| C6 ISOM PENEX | ISOM STRPR BTMS | S2152684_FID1_A.CDF | 12/26/2016 | 4:30 | 0.0 | 0.0 | 347,822.007 | 0.0 |
| /C6 ISOM PENEX | ISOM STRPR BTMS | 52152902_FID1_A.CDF | 12/27/2016 | 4:30 | 0.0 | , 0.0 | 347,822.007 | 0.0 |
| TOC ICOLA OFFICE | ISOM STRPR BTMS | COLEDATE CIDA A COC | 12/20/2016 | 4.20 | 0.0 | 0.0 | 247 022 007 | 0.0 |
| /C6 ISOM PENEX | 130141 STRI II BITHES | 52153175_FID1_A.CDF | 12/28/2016 | 4:30 | 0.0 | 0.0 | 347,822.007 | 0.0 |

| HF AIRVALION ALYFEED \$313370.D 3013/2016 430 3.2 Anabay 2.3 466,1230. 461. 120. 140. 140. 140. 140. 140. 140. 140. 14 | 11-la ht | | t | ì | | nimum of three mor | | ļ · | | H2S Con |
|---|---------------|-------------|-------------|------------|------|--------------------|---------|-----|-------------|------------|
| FEATMATION ALVERED \$13137020 100/10016 430 216 Annexis 219 444,128.88 441,12 | | | | | | | | | | (ppmv) |
| HE ALTARION ALFEED \$233376.0 109/2016 430 2.6 Antes2 1.9 466,1262 Antes 1.1 19 466,1262 | | | | | | | | | | 5.8 |
| HE ALTIATION ALLY FEED 32133700 D 109/32016 430 11 Antesiz 15 446,12200 HE ALTIATION ALLY FEED 321332012 109/72016 430 4.6 Antesiz 3.0 466,12300 ME ALTIATION ALLY FEED 321332012 109/72016 430 4.6 Antesiz 3.0 466,12300 ME ALTIATION ALLY FEED 32133202 D 109/72016 430 4.6 Antesiz 3.0 466,12300 ME ALTIATION ALLY FEED 32133202 D 109/72016 430 3.7 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32133202 D 109/72016 430 3.7 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32133202 D 109/72016 430 3.2 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32133202 D 109/72016 430 3.2 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32133202 D 109/72016 430 3.2 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32133202 D 109/72016 430 3.2 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32134517.0 109/72016 430 3.4 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32134517.0 109/72016 430 3.4 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 3214517.0 109/72016 430 3.4 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 3214517.0 109/72016 430 3.4 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32145150.0 109/72016 430 3.4 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32145150.0 109/72016 430 3.4 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32145150.0 109/72016 430 3.0 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32145150.0 109/72016 430 3.0 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32145150.0 109/72016 430 3.0 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32145150.0 109/72016 430 3.0 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32145150.0 109/72016 430 3.0 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32145150.0 109/72016 430 3.0 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32145150.0 109/72016 430 3.0 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32145150.0 109/72016 430 3.0 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32145150.0 109/72016 430 3.0 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32145150.0 109/72016 430 3.0 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32145150.0 109/72016 430 3.0 Antesiz 2.2 446,1220 ME ALTIATION ALLY FEED 32145150.0 109/72016 430 3.0 Antesiz 2.2 Antesiz 2.2 A | | 1 | | | | (| | | | 6.1 |
| RE ALTATION ALLY FEED 521323720 19/7/2016 430 4.6 Antels 3.3 46,1226.0 RE ALKTATION ALLY FEED 521323720 19/7/2016 430 4.2 Antels 3.0 46,1226.0 RE ALKTATION ALLY FEED 521323720 19/7/2016 430 4.2 Antels 3.0 46,1226.0 RE ALKTATION ALLY FEED 521332720 19/7/2016 430 3.2 Antels 3.0 46,1226.0 RE ALKTATION ALLY FEED 52133200.0 19/1/2016 430 3.5 Antels 2.2 5 464,1230.0 RE ALKTATION ALLY FEED 52133200.0 19/1/2016 430 3.5 Antels 2.2 5 464,1230.0 RE ALKTATION ALLY FEED 52133200.0 19/1/2016 430 3.5 Antels 2.2 5 464,1230.0 RE ALKTATION ALLY FEED 52133370.0 19/1/2016 430 3.5 Antels 2.2 5 464,1230.0 RE ALKTATION ALLY FEED 52133370.0 19/1/2016 430 3.5 Antels 2.2 5 464,1230.0 RE ALKTATION ALLY FEED 52134370.0 19/1/2016 430 3.0 Antels 2.2 4 464,1230.0 RE ALKTATION ALLY FEED 52134370.0 19/1/2016 430 3.0 Antels 2.2 4 464,1230.0 RE ALKTATION ALLY FEED 52134370.0 19/1/2016 430 3.0 Antels 2.2 4 464,1230.0 RE ALKTATION ALLY FEED 52134370.0 19/1/2016 430 3.0 Antels 2.2 4 464,1230.0 RE ALKTATION ALLY FEED 52134370.0 19/1/2016 430 3.0 Antels 2.2 1 464,1230.0 RE ALKTATION ALLY FEED 52134570.0 19/1/2016 430 3.0 Antels 2.2 1 464,1230.0 RE ALKTATION ALLY FEED 52134570.0 19/1/2016 430 3.0 Antels 2.2 1 464,1230.0 RE ALKTATION ALLY FEED 52134570.0 19/1/2016 430 3.0 Antels 2.2 1 464,1230.0 RE ALKTATION ALLY FEED 52134570.0 19/1/2016 430 3.0 Antels 2.2 1 464,1230.0 RE ALKTATION ALLY FEED 52134570.0 19/1/2016 430 3.0 Antels 2.2 1 464,1230.0 RE ALKTATION ALLY FEED 52134570.0 19/1/2016 430 3.0 Antels 2.2 1 464,1230.0 RE ALKTATION ALLY FEED 52134570.0 19/1/2016 430 3.0 Antels 2.2 1 464,1230.0 RE ALKTATION ALLY FEED 52134570.0 19/1/2016 430 430 47 Antels 2.2 1 464,1230.0 RE ALKTATION ALLY FEED 52134570.0 19/1/2016 430 430 47 Antels 2.2 1 464,1230.0 RE ALKTATION ALLY FEED 52134570.0 19/1/2016 430 430 47 Antels 2.2 1 464,1230.0 RE ALKTATION ALLY FEED 52134570.0 19/1/2016 430 430 42 Antels 2.2 1 464,1230.0 RE ALKTATION ALLY FEED 52134570.0 19/1/2016 430 430 42 Antels 2.2 1 464,1230.0 RE ALKTATION ALLY FE | | | | | | 1 | | | | 4.2 3.4 |
| FE ALTICATION ALTY FEED \$21339210 10/7/2016 430 4.2 Antelizi 3.3 466,1286 466,1286 470 | | | | | | | | | | 4.2 |
| F. ALTATATION ALLY FEED 32113577.0 301/A07016 4.30 4.2 Antesity 3.0 446,1287.7 | | | • | | | | 1 | | | 7.4 |
| REALTATION ALVETED \$2113755.0 10/19/2016 4.30 3.7 Annexis 2.7 466,1279.0 | | | | | | | | | | 6.8 |
| HARLYATION | | | | | | | | | | 6.4 |
| ## AKTATION ALFFEED \$2333902.D 1071/2016 4:30 3.5 Antiskiz 2.5 466,1220.0 | | | | | | t . | | | | 6.0 |
| ## ALKTATION ALY FEED \$2333970.D 10718/7016 4:30 3.2 Antebit 2 3 466,1230.0 Antebit 2 466,1230.0 Antebit 2 5134972.D 10718/7016 4:30 3.3 Antebit 2 4 466,1230.0 Antebit 2 5134972.D 10718/7016 4:30 3.3 Antebit 2 4 466,1230.0 Antebit 2 5134972.D 10718/7016 4:30 3.0 Antebit 2 4 466,1230.0 Antebit 2 5134972.D 10718/7016 4:30 3.0 Antebit 2 4 466,1230.0 Antebit 2 5134972.D 10718/7016 4:30 3.0 Antebit 2 4 466,1230.0 Antebit 2 5134972.D 10718/7016 4:30 3.0 Antebit 2 4 466,1230.0 Antebit 2 5134972.D 10718/7016 4:30 3.0 Antebit 3 51 466,1235.A Ant | | | S2133302.D | 10/11/2016 | | | | | 446,129.000 | 5.6 |
| ## ALTIVATION ALLY FEED \$2134963.D 10/14/2016 4:30 3.4 Antible? 2.4 446,129.06 ## ALTIVATION ALLY FEED \$2134571.D 10/14/2016 4:30 3.4 Antible? 2.4 446,129.06 ## ALTIVATION ALLY FEED \$2134571.D 10/14/2016 4:30 3.0 Antible? 2.4 446,129.06 ## ALTIVATION ALLY FEED \$2134572.D 10/14/2016 4:30 3.0 Antible? 2.4 446,129.06 ## ALTIVATION ALLY FEED \$213550.D 10/14/2016 4:30 3.0 Antible? 2.1 446,129.36 ## ALTIVATION ALLY FEED \$213550.D 10/14/2016 4:30 3.0 Antible? 2.1 446,129.36 ## ALTIVATION ALLY FEED \$2135550.D 10/14/2016 4:30 4.7 Antible? 3.4 446,129.36 ## ALTIVATION ALLY FEED \$2135592.D 10/14/2016 4:30 4.7 Antible? 3.4 446,129.36 ## ALTIVATION ALLY FEED \$2135592.D 10/14/2016 4:30 4.7 Antible? 3.4 446,129.36 ## ALTIVATION ALLY FEED \$2135592.D 10/14/2016 4:30 2.4 Antible? 3.7 446,129.37 ## ALTIVATION ALLY FEED \$2135592.D 10/14/2016 4:30 2.4 Antible? 3.7 446,129.37 ## ALTIVATION ALLY FEED \$2135592.D 10/14/2016 4:30 2.4 Antible? 3.7 446,129.37 ## ALTIVATION ALLY FEED \$2135592.D 10/14/2016 4:30 2.4 Antible? 3.7 446,129.37 ## ALTIVATION ALLY FEED \$2135592.D 10/14/2016 4:30 2.4 Antible? 3.7 446,129.37 ## ALTIVATION ALLY FEED \$2135592.D 10/14/2016 4:30 2.4 Antible? 3.7 446,129.37 ## ALTIVATION ALLY FEED \$2135592.D 10/14/2016 4:30 2.4 Antible? 3.7 446,129.37 ## ALTIVATION ALLY FEED \$2135592.D 10/14/2016 4:30 2.4 Antible? 3.7 446,129.37 ## ALTIVATION ALLY FEED \$2135592.D 10/14/2016 4:30 2.4 Antible? 3.7 446,129.37 ## ALTIVATION ALLY FEED \$2135592.D 10/14/2016 4:30 2.6 Antible? 3.7 446,129.37 ## ALTIVATION ALLY FEED \$2135592.D 10/14/2016 4:30 2.6 Antible? 3.7 446,129.37 ## ALTIVATION ALLY FEED \$2135592.D 10/14/2016 4:30 2.6 Antible? 3.7 446,129.37 ## ALTIVATION ALLY FEED \$2135592.D 10/14/2016 4:30 2.6 Antible? 3.7 446,129.37 ## ALTIVATION ALLY FEED \$2135592.D 10/14/2016 4:30 2.6 Antible? 3.7 446,129.37 ## ALTIVATION ALLY FEED \$2135592.D 10/14/2016 4:30 2.6 Antible? 3.7 446,129.37 ## ALTIVATION ALLY FEED \$2145502.D 10/14/2016 4:30 3.7 Antible? 3.7 Antible? 3.7 446,129.37 ## ALTIVATION ALLY FEED \$2145502.D 10/14/2016 4:30 3.7 Antib | HF ALKYLATION | ALKY FEED | | 10/12/2016 | 4:30 | 3.2 | Antek#2 | | 446,129.134 | 5.1 |
| ## ALTINATION ALF FEED \$213496.0 10915/2016 430 3.4 Antible? 2.4 465,120.0 466,120.3 4 | HF ALKYLATION | ALKY FEED | | | | 3.3 | Antek#2 | 2.4 | 446,129.089 | 5.3 |
| FARTMATION ALLY FEED \$21145710 \$19147016 \$430 \$3.0 Antelle \$2.1 \$46,129.5 \$46,129. | HF ALKYLATION | ALKY FEED | | 10/14/2016 | 4:30 | 3.2 | Antek#2 | 2.3 | 446,129,134 | 5.1 |
| HE ARCHATON ALY FEED 52134751, 2017/2016 4:30 3.0 Antekit 2 2.1 466,139:24 HE ARCHATON ALY FEED 52135311, 3019/3016 4:30 2.3 Antekit 1.7 466,139:54 HE ARCHATON ALY FEED 52135311, 3019/3016 4:30 2.3 Antekit 1.7 466,139:54 HE ARCHATON ALY FEED 52135310, 307/3016 4:30 2.3 Antekit 1.7 466,139:54 HE ARCHATON ALY FEED 52135310, 307/3016 4:30 4:7 Antekit 2.3 466,139:54 HE ARCHATON ALY FEED 52135310, 307/3016 4:30 4:7 Antekit 2.3 466,139:54 HE ARCHATON ALY FEED 521355310, 307/3016 4:30 4:0 4:0 Antekit 2.3 466,139:54 HE ARCHATON ALY FEED 521355310, 307/3016 4:30 2.1 Antekit 2.3 466,139:54 HE ARCHATON ALY FEED 521355310, 307/3016 4:30 2.6 Antekit 1.7 466,139:54 HE ARCHATON ALY FEED 521355310, 307/3016 4:30 2.6 Antekit 1.7 466,139:54 HE ARCHATON ALY FEED 521355310, 307/3016 4:30 2.6 Antekit 1.7 466,139:44 HE ARCHATON ALY FEED 521357540, 307/3016 4:30 2.6 Antekit 1.7 466,139:44 HE ARCHATON ALY FEED 521357540, 307/3016 4:30 2.6 Antekit 1.7 466,139:44 HE ARCHATON ALY FEED 521357540, 307/3016 4:30 2.6 Antekit 1.7 466,139:44 HE ARCHATON ALY FEED 521357540, 307/3016 4:30 2.6 Antekit 1.7 466,139:44 HE ARCHATON ALY FEED 521357540, 307/3016 4:30 2.6 Antekit 1.7 466,139:44 HE ARCHATON ALY FEED 521357540, 307/3016 4:30 2.6 Antekit 1.9 466,139:54 HE ARCHATON ALY FEED 521357540, 307/3016 4:30 2.6 Antekit 1.9 466,139:54 HE ARCHATON ALY FEED 521357540, 307/3016 4:30 2.6 Antekit 1.9 466,139:54 HE ARCHATON ALY FEED 521357550, 307/3016 4:30 2.6 Antekit 1.9 466,139:54 HE ARCHATON ALY FEED 521357550, 307/3016 4:30 2.1 Antekit 1.9 466,139:54 HE ARCHATON ALY FEED 521357550, 307/3016 4:30 2.1 Antekit 1.9 466,139:54 HE ARCHATON ALY FEED 52135750, 307/3016 4:30 3.5 Antekit 1.9 466,139:54 HE ARCHATON ALY FEED 52135750, 307/3016 4:30 3.5 Antekit 1.9 466,139:54 HE ARCHATON ALY FEED 5214560, 307/3016 4:30 3.5 Antekit 1.9 466,139:54 HE ARCHATON ALY FEED 5214560, 307/3016 4:30 3.5 Antekit 1.9 466,139:54 HE ARCHATON ALY FEED 5214560, 307/3016 4:30 3.5 Antekit 1.9 466,139:54 HE ARCHATON ALY FEED 52145670, 307/3016 4:30 3.0 Antekit 1.9 466,139:54 HE ARCHA | HF ALKYLATION | ALKY FEED | | | 4:30 | 3,4 | Antek#2 | 2.4 | 445,129,067 | 5.4 |
| HE ALVATATION ALLY FEED \$2139536 D 10/18/2016 4:30 3.0 Ancels 1 1.6 446,129-55 HE ALVATATION ALLY FEED \$2139546 D 10/20/2016 4:30 2.3 Ancels 1 1.7 446,129-55 HE ALVATATION ALLY FEED \$2139546 D 10/20/2016 4:30 4.0 Ancels 2 1.3 446,128-66 HE ALVATATION ALLY FEED \$2139692 D 10/21/2016 4:30 4.0 Ancels 2 1.9 446,128-56 HE ALVATATION ALLY FEED \$2139692 D 10/21/2016 4:30 4.0 Ancels 2 1.9 446,128-56 HE ALVATATION ALLY FEED \$2139692 D 10/21/2016 4:30 4.0 Ancels 2 1.9 446,128-56 HE ALVATATION ALLY FEED \$2139692 D 10/21/2016 4:30 2.4 Ancels 2 1.9 446,128-56 HE ALVATATION ALLY FEED \$2139692 D 10/21/2016 4:30 2.4 Ancels 2 1.9 446,128-56 HE ALVATATION ALLY FEED \$2139740 D 10/21/2016 4:30 2.4 Ancels 2 1.9 446,128-56 HE ALVATATION ALLY FEED \$2139746 D 10/21/2016 4:30 2.4 Ancels 2 1.9 446,128-56 HE ALVATATION ALLY FEED \$2139746 D 10/21/2016 4:30 2.3 Ancels 1 1.7 446,128-56 HE ALVATATION ALLY FEED \$2139746 D 10/21/2016 4:30 2.3 Ancels 1 1.9 446,128-56 HE ALVATATION ALLY FEED \$2139746 D 10/21/2016 4:30 2.0 Ancels 1 1.9 446,128-56 HE ALVATATION ALLY FEED \$2139746 D 10/21/2016 4:30 3.0 Ancels 1 1.9 446,128-56 HE ALVATATION ALLY FEED \$2139746 D 10/21/2016 4:30 3.0 Ancels 1 1.9 446,128-56 HE ALVATATION ALLY FEED \$2139545 D 10/21/2016 4:30 3.0 Ancels 1 1.9 446,128-56 HE ALVATATION ALLY FEED \$2139545 D 10/20/2016 4:30 2.0 Ancels 1 1.9 446,128-56 HE ALVATATION ALLY FEED \$2139545 D 10/20/2016 4:30 2.1 Ancels 1 1.5 446,128-56 HE ALVATATION ALLY FEED \$2139553 D 11/20/2016 4:30 2.1 Ancels 1 1.9 446,128-56 HE ALVATATION ALLY FEED \$2139505 D 11/20/2016 4:30 2.2 Ancels 1 1.5 446,128-56 HE ALVATATION ALLY FEED \$2139505 D 11/20/2016 4:30 2.2 Ancels 1 1.5 446,128-56 HE ALVATATION ALLY FEED \$2149605 D 11/20/2016 4:30 2.2 Ancels 1 1.5 446,128-56 HE ALVATATION ALLY FEED \$2149605 D 11/20/2016 4:30 2.2 Ancels 1 1.5 446,128-56 HE ALVATATION ALLY FEED \$2149605 D 11/20/2016 4:30 2.2 Ancels 1 1.4 Ancels 1 1.8 446,128-56 HE ALVATATION ALLY FEED \$2149605 D 11/20/2016 4:30 2.2 Ancels 1 1.4 Ancels 1 1.8 446,128-56 HE ALVATATION ALLY FEED \$2149605 D 11/20/2016 | HF ALKYLATION | ALKY FEED | | | | 3.4 | Antek#2 | 2.4 | 446,129.040 | 5.5 |
| HE ALTATION ALY FEED 52139311_D 10/19/2016 4:30 2:3 Antesis 1 1.6 446,12954 HE ALTATION ALY FEED 52139591_D 10/21/2016 4:30 4:7 Antesis 2 3:4 446,1294 HE ALTATION ALY FEED 52139591_D 10/21/2016 4:30 4:7 Antesis 2 3:4 446,1294 HE ALTATION ALY FEED 52139592_D 10/21/2016 4:30 2:4 Antesis 2 3:9 446,1294 HE ALTATION ALY FEED 52139592_D 10/21/2016 4:30 2:4 Antesis 2 1:7 446,1295 HE ALTATION ALY FEED 52139592_D 10/21/2016 4:30 2:4 Antesis 2 1:7 446,1295 HE ALTATION ALY FEED 52139762_D 10/21/2016 4:30 2:4 Antesis 2 1:5 446,1295 HE ALTATION ALY FEED 52139762_D 10/21/2016 4:30 2:4 Antesis 2 1:5 446,1295 HE ALTATION ALY FEED 52139762_D 10/21/2016 4:30 2:4 Antesis 2 1:5 446,1295 HE ALTATION ALY FEED 52139762_D 10/21/2016 4:30 2:4 Antesis 2 1:5 446,1295 HE ALTATION ALY FEED 52139762_D 10/21/2016 4:30 2:4 Antesis 2 1:5 446,1295 HE ALTATION ALY FEED 52139762_D 10/21/2016 4:30 2:4 Antesis 1 1:9 446,1294 HE ALTATION ALY FEED 52139762_D 10/21/2016 4:30 2:4 Antesis 1 1:9 446,1294 HE ALTATION ALY FEED 5213975_D 10/21/2016 4:30 2:4 Antesis 1 1:9 446,1294 HE ALTATION ALY FEED 5213975_D 10/21/2016 4:30 2:4 Antesis 1 1:5 446,1294 HE ALTATION ALY FEED 5213975_D 11/2016 4:30 3:5 Antesis 1 1:5 446,1294 HE ALTATION ALY FEED 5213975_D 11/2016 4:30 3:5 Antesis 1 1:5 446,1294 HE ALTATION ALY FEED 521395_D 11/2016 4:30 3:5 Antesis 1 1:5 446,1294 HE ALTATION ALY FEED 521396_D 11/2016 4:30 3:5 Antesis 1 1:5 446,1294 HE ALTATION ALY FEED 521396_D 11/2016 4:30 3:5 Antesis 1 1:5 446,1294 HE ALTATION ALY FEED 521396_D 11/2016 4:30 3:5 Antesis 1 1:5 446,1294 HE ALTATION ALY FEED 521405_D 11/2016 4:30 3:5 Antesis 1 1:5 446,1294 HE ALTATION ALY FEED 521405_D 11/2016 4:30 3:5 Antesis 1 1:5 446,1294 HE ALTATION ALY FEED 521405_D 11/2016 4:30 3:5 Antesis 1 1:5 446,1294 HE ALTATION ALY FEED 5214465_D 11/2016 4:30 3:5 Antesis 1 1:5 446,1294 HE ALTATION ALY FEED 5214465_D 11/2016 4:30 3:5 Antesis 1 1:5 446,1294 HE ALTATION ALY FEED 5214465_D 11/2016 4:30 3:5 Antesis 1 1:5 446,1294 HE ALTATION ALY FEED 5214465_D 11/2016 4:30 3:5 Antesis 1 1:4 46,1294 HE ALTA | HF ALKYLATION | | | | | 3.0 | Antek#2 | 2.1 | 446,129.228 | 4.8 |
| FA ALTATION ALY FEED \$2135566.0 107/2016 4:30 4:7 Annew 2:3 Annew 3:4 46,1226.0 4:3 | | | | | | | Antek#2 | | 446,129.241 | 4.8 |
| FARTATION ALY FEED \$2138931_D 109/2/2016 4:30 4.7 Antewitz 2.9 466,1239.64 4:30 4.7 Antewitz 2.9 466,1239.64 4:30 2.4 Antewitz 1.7 4:46,1239.51 4:40,1239.14 4:30 2.4 Antewitz 1.5 4:46,1239.51 4:40,1239.14 4:30 2.4 Antewitz 1.5 4:46,1239.51 4:40,1239.51 4: | | | | | | | Antek#1 | | 446,129.544 | 3.7 |
| FF ALVALATION | | | | | | | | | 446,129.518 | 3.8 |
| HE ALVIATION ALKY FEED \$3119532.D 10/24/2016 430 2.4 Antels2 1.5 46,12952 HE ALVIATION ALKY FEED \$3119532.D 10/24/2016 430 2.4 Antels2 1.5 46,12952 HE ALVIATION ALKY FEED \$3119316.D 10/26/2016 430 2.4 Antels2 1.5 46,12952 HE ALVIATION ALKY FEED \$3119316.D 10/26/2016 430 2.5 Antels1 1.7 46,12952 HE ALVIATION ALKY FEED \$3119316.D 10/26/2016 430 2.5 Antels1 1.7 46,12952 HE ALVIATION ALKY FEED \$3119316.D 10/26/2016 430 2.5 Antels1 1.7 46,12952 HE ALVIATION ALKY FEED \$3119316.D 10/26/2016 430 3.0 Antels1 1.2 46,12952 HE ALVIATION ALKY FEED \$2139346.D 10/36/2016 430 2.5 Antels1 1.9 46,12953 HE ALVIATION ALKY FEED \$2139345.D 10/36/2016 430 2.5 Antels1 1.9 46,12953 HE ALVIATION ALKY FEED \$213935.D 11/20/16 430 2.5 Antels2 2.7 Antels2 2.7 HE ALVIATION ALKY FEED \$213935.D 11/20/16 430 2.5 Antels2 2.7 Antels2 2.7 Antels2 2.7 HE ALVIATION ALKY FEED \$213935.D 11/20/16 430 2.2 Antels2 1.3 46,12954 HE ALVIATION ALKY FEED \$213935.D 11/20/16 430 1.9 Antels2 1.3 46,12954 HE ALVIATION ALKY FEED \$214055.D 11/20/16 430 1.9 Antels2 1.3 46,12954 HE ALVIATION ALKY FEED \$214055.D 11/20/16 430 1.9 Antels2 1.3 46,12954 HE ALVIATION ALKY FEED \$214055.D 11/20/16 430 1.4 Antels2 1.5 46,12954 HE ALVIATION ALKY FEED \$214055.D 11/20/16 430 1.4 Antels2 1.5 46,12954 HE ALVIATION ALKY FEED \$214055.D 11/20/16 430 1.5 Antels2 1.5 | | | | | | | | | 446,128.465 | 7.6 |
| FF ARKTATION ALKY FEED \$313597.0 10/25/2016 430 2.6 Antelsi 1.7 44,529.56 | | | 1 ' | | | ì | 1 | | 446,128.764 | 6.5 |
| HE ARCHATION ALKY FEED \$313715-0 10/25/2016 430 2.5 Antelwij 1.7 46,12934 | | | | | | 1 | t I | | 446,129.513 | 3.8 |
| HF ALVIATION ALVY FEED \$2137136.D 10/26/2016 4:30 2.6 Anteks1 1.7 446,129.53 HF ALVIATION ALVY FEED \$213776.D 10/28/2016 4:30 3.0 Anteks1 1.7 446,129.53 HF ALVIATION ALVY FEED \$213776.D 10/28/2016 4:30 3.0 Anteks1 1.9 446,129.54 HF ALVIATION ALVY FEED \$213776.D 10/28/2016 4:30 2.6 Anteks1 1.9 446,129.54 HF ALVIATION ALVY FEED \$213878.D 10/30/2016 4:30 2.6 Anteks1 1.5 446,129.54 HF ALVIATION ALVY FEED \$213873.D 11/1/2016 4:30 2.1 Anteks1 1.5 446,129.54 HF ALVIATION ALVY FEED \$213873.D 11/1/2016 4:30 3.7 Anteks2 2.7 446,128.94 HF ALVIATION ALVY FEED \$213873.D 11/1/2016 4:30 3.5 Anteks1 1.5 446,128.96 HF ALVIATION ALVY FEED \$213853.D 11/1/2016 4:30 3.5 Anteks2 3.4 446,128.97 HF ALVIATION ALVY FEED \$213853.D 11/1/2016 4:30 3.5 Anteks2 3.4 446,128.97 HF ALVIATION ALVY FEED \$213853.D 11/1/2016 4:30 3.5 Anteks2 3.4 446,128.97 HF ALVIATION ALVY FEED \$214050.D 11/1/2016 4:30 1.8 Anteks2 1.3 446,128.97 HF ALVIATION ALVY FEED \$214050.D 11/1/2016 4:30 1.5 Anteks2 1.3 446,128.97 HF ALVIATION ALVY FEED \$214050.D 11/1/2016 4:30 1.5 Anteks2 1.3 446,128.97 HF ALVIATION ALVY FEED \$214140.D 11/1/2016 4:30 1.5 Anteks2 1.0 446,122.97 HF ALVIATION ALVY FEED \$214140.D 11/1/2016 4:30 2.5 Anteks4 2.5 446,122.97 HF ALVIATION ALVY FEED \$214140.D 11/1/2016 4:30 3.5 Anteks4 2.5 446,122.97 HF ALVIATION ALVY FEED \$214140.D 11/1/2016 4:30 3.5 Anteks4 2.5 446,122.97 HF ALVIATION ALVY FEED \$214140.D 11/1/2016 4:30 3.5 Anteks4 2.5 446,122.97 HF ALVIATION ALVY FEED \$214140.D 11/1/2016 4:30 3.5 Anteks4 2.5 446,122.97 HF ALVIATION ALVY FEED \$214140.D 11/1/2016 4:30 3.5 Anteks4 2.5 446,122.97 HF ALVIATION ALVY FEED \$214140.D 11/1 | | | | | | | • | | | 3.4 |
| FF ARYLATION | | | 1 | | | | | | | 3.9 |
| FA ALYLATION | | | | | | ł | 1 | | | 4.1 |
| FRAINTATION ALEY FEED \$2139822 D 103/207016 4:30 2:6 Antelett 1:9 446,12924 466,12926 4:30 2:6 Antelett 1:9 446,12926 4:30 2:6 Antelett 1:9 446,12926 4:30 3:7 Antelett 1:5 446,12926 4:30 3:7 Antelett 1:5 446,12926 4:30 3:7 Antelett 1:5 446,12926 4:40 3:7 Antelett 1:5 446,12926 4:30 3:7 Antelett 1:5 446,12926 4:30 3:7 Antelett 1:5 446,12926 4:30 3:7 Antelett 1:5 446,12926 4:40 | | | | | | | | | | 3.7 4.2 |
| HE ALKYATION ALY FEED \$2138484.D 10/30/2016 4:30 2:1 Anteket 1:5 466,129.64 HE ALKYATION ALY FEED \$2138755.D 11/1/2016 4:30 3.7 Anteket 2:7 446,128.91 HE ALKYATION ALY FEED \$2138075.D 11/1/2016 4:30 3.7 Anteket 2:7 446,128.91 HE ALKYATION ALY FEED \$2138075.D 11/1/2016 4:30 3.5 Anteket 2:7 446,128.91 HE ALKYATION ALY FEED \$2138080.D 11/4/2016 4:30 2:2 Anteket 1:5 446,128.91 HE ALKYATION ALY FEED \$2138938.D 11/4/2016 4:30 1:8 Anteket 2:1 3 446,129.81 HE ALKYATION ALY FEED \$2140900.D 11/6/2016 4:30 1:9 Anteket 2:1 3 446,129.71 HE ALKYATION ALY FEED \$2140955.D 11/6/2016 4:30 1:9 Anteket 1:3 446,129.71 HE ALKYATION ALY FEED \$2140955.D 11/6/2016 4:30 1:9 Anteket 1:3 446,129.73 HE ALKYATION ALY FEED \$2140955.D 11/6/2016 4:30 1:9 Anteket 1:3 446,129.73 HE ALKYATION ALY FEED \$2140955.D 11/6/2016 4:30 1:4 Anteket 1:0 446,129.84 HE ALKYATION ALY FEED \$2141685.D 11/1/2016 4:30 2:5 Anteket 1:8 446,129.84 HE ALKYATION ALY FEED \$214164.D 11/1/2016 4:30 3:5 Anteket 1:8 446,129.84 HE ALKYATION ALY FEED \$214164.D 11/1/2016 4:30 3:5 Anteket 1:5 446,129.84 HE ALKYATION ALY FEED \$214168.D 11/1/2016 4:30 3:5 Anteket 1:5 446,129.84 HE ALKYATION ALY FEED \$214168.D 11/1/2016 4:30 3:5 Anteket 1:5 446,129.84 HE ALKYATION ALY FEED \$214168.D 11/1/2016 4:30 3:6 Anteket 1:4 46,129.84 HE ALKYATION ALY FEED \$214168.D 11/1/2016 4:30 3:0 Anteket 1:4 46,129.84 HE ALKYATION ALKY FEED \$214268.D 11/1/2016 4:30 3:0 Anteket 1:4 46,129.84 HE ALKYATION ALKY FEED \$214268.D 11/1/2016 4:30 3:0 Anteket 1:4 46,129.84 HE ALKYATION ALKY FEED \$214268.D 11/1/2016 4:30 3:0 Anteket 1:4 46,129.84 HE ALKYATION ALKY FEED \$214268.D 11/1/2016 4:30 3:0 Anteket 1:4 46,129.84 HE ALKYATION ALKY FEED \$2144670.D 11/2016 4:30 3:0 Anteket 1:4 46,129.84 HE ALKYATION ALKY FEED \$2144670.D 11/2016 4:30 3:0 Anteket 1:4 46,129.84 HE ALKYATION ALKY FEED \$2144670.D 11/2016 4:30 3:0 Anteket 1:4 46,129.84 HE ALKYATION ALKY FEED \$2144670.D 11/2016 4:30 3:0 Anteket 1:4 46,129.84 HE ALKYATION ALKY FEED \$2144670.D 11/2016 4:30 3:0 Anteket 1:4 46,129.84 HE ALKYATION ALKY FEED \$2146870.D 11/2 | | | | | | | | | | 4.2 |
| HF ALKYATION ALYFEED \$219875.D 11/12/2016 4:30 3.7 Aniek#1 1.5 466,329.64 HF ALKYATION ALYFEED \$219807.D 11/2/2016 4:30 3.5 Aniek#1 2.5 466,329.84 HF ALKYATION ALYFEED \$219803.D 11/2/2016 4:30 2.2 Aniek#1 1.5 466,329.64 HF ALKYATION ALYFEED \$219803.D 11/3/2016 4:30 2.2 Aniek#1 1.5 466,329.64 HF ALKYATION ALYFEED \$219803.D 11/3/2016 4:30 1.8 Aniek#2 1.3 466,329.76 HF ALKYATION ALYFEED \$2140805.D 11/3/2016 4:30 1.9 Aniek#1 1.4 446,329.76 HF ALKYATION ALYFEED \$2140805.D 11/3/2016 4:30 1.9 Aniek#1 1.4 446,329.76 HF ALKYATION ALYFEED \$2140805.D 11/3/2016 4:30 1.9 Aniek#1 1.4 446,329.76 HF ALKYATION ALYFEED \$2140805.D 11/3/2016 4:30 1.9 Aniek#1 1.8 446,329.76 HF ALKYATION ALYFEED \$2140805.D 11/3/2016 4:30 2.5 Aniek#1 1.8 446,329.76 HF ALKYATION ALYFEED \$2140805.D 11/3/2016 4:30 2.5 Aniek#1 1.8 446,329.76 HF ALKYATION ALYFEED \$2141805.D 11/3/2016 4:30 2.5 Aniek#1 1.8 446,329.76 HF ALKYATION ALYFEED \$2141805.D 11/3/2016 4:30 3.5 Aniek#1 2.5 446,329.86 HF ALKYATION ALYFEED \$2141805.D 11/3/2016 4:30 3.5 Aniek#1 2.5 446,329.86 HF ALKYATION ALYFEED \$2141805.D 11/3/2016 4:30 3.6 Aniek#1 2.5 446,329.87 HF ALKYATION ALYFEED \$2141805.D 11/3/2016 4:30 3.6 Aniek#1 2.4 46,329.97 HF ALKYATION ALYFEED \$2141805.D 11/3/2016 4:30 3.4 Aniek#1 2.4 46,329.97 HF ALKYATION ALYFEED \$2141805.D 11/3/2016 4:30 3.4 Aniek#1 2.4 46,329.97 HF ALKYATION ALYFEED \$2141805.D 11/3/2016 4:30 3.4 Aniek#1 2.4 46,329.97 HF ALKYATION ALYFEED \$2141805.D 11/3/2016 4:30 3.7 Aniek#1 2.1 46,329.97 HF ALKYATION ALYFEED \$2141805.D 11/2/2016 4:30 3.7 Aniek#1 2.1 46,329.97 HF ALKYATION ALYFEED \$2141807.D 11/2/2016 4:30 3.7 Aniek#1 2.4 46,329.97 HF ALKYATION ALYFEED \$2141807.D 11/2/2016 4:30 1.7 Aniek#1 1.2 46,329.97 HF ALKYATION ALYFEED \$2141807.D 11/2/2016 4:30 1.7 Aniek#1 1.2 46,329.97 HF ALKYATION ALYFEED \$2141807.D 11/2/2016 4:30 1.2 Aniek#1 1.2 46,329.97 HF ALKYATION ALYFEED \$2141807.D 11/2/2016 4:30 1.2 Aniek#1 1.2 46,329.97 HF ALKYATION ALYFEED \$2141807.D 11/2/2016 4:30 1.2 Aniek#1 1.3 46,329.97 HF ALKYATION ALYFEED \$2141807.D 11/2/2016 4:30 1.2 Aniek#1 1.3 4 | | | | | | | | | | 4.2 |
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| HF ALKYLATION ALKY FEED \$219538.D 11/4/2016 4:30 2.2 Antield 1.15 446,129.67 HF ALKYLATION ALKY FEED \$2140009.D 11/8/2016 4:30 1.9 Antield 2.13 446,129.67 HF ALKYLATION ALKY FEED \$2140291.D 11/7/2016 4:30 1.9 Antield 2.13 446,129.67 HF ALKYLATION ALKY FEED \$2140555.D 11/8/2016 4:30 1.9 Antield 2.13 446,129.67 HF ALKYLATION ALKY FEED \$2140555.D 11/8/2016 4:30 1.4 Antield 2.10 446,129.57 HF ALKYLATION ALKY FEED \$214142.D 11/10/2016 4:30 2.5 Antield 2.15 466,129.57 HF ALKYLATION ALKY FEED \$214144.D 11/10/2016 4:30 2.1 Antield 2.15 466,129.58 HF ALKYLATION ALKY FEED \$214164.D 11/10/2016 4:30 3.5 Antield 1.2 466,129.58 HF ALKYLATION ALKY FEED \$214164.D 11/10/2016 4:30 3.6 Antield 1.2 466,129.58 HF ALKYLATION ALKY FEED \$214164.D 11/10/2016 4:30 3.6 Antield 1.2 466,129.58 HF ALKYLATION ALKY FEED \$214304.D 11/10/2016 4:30 3.6 Antield 1.2 466,129.58 HF ALKYLATION ALKY FEED \$214304.D 11/10/2016 4:30 3.0 Antield 1.2 466,129.58 HF ALKYLATION ALKY FEED \$214304.D 11/10/2016 4:30 3.0 Antield 1.2 466,129.58 HF ALKYLATION ALKY FEED \$214304.D 11/10/2016 4:30 3.0 Antield 1.2 466,129.58 HF ALKYLATION ALKY FEED \$214404.D 11/10/2016 4:30 3.0 Antield 1.2 466,129.58 HF ALKYLATION ALKY FEED \$214404.D 11/10/2016 4:30 3.0 Antield 1.2 466,129.58 HF ALKYLATION ALKY FEED \$214408.D 11/10/2016 4:30 3.0 Antield 1.2 466,129.58 HF ALKYLATION ALKY FEED \$214408.D 11/10/2016 4:30 1.7 Antield 1.2 466,129.58 HF ALKYLATION ALKY FEED \$214408.D 11/10/2016 4:30 1.7 Antield 1.2 466,129.58 HF ALKYLATION ALKY FEED \$214408.D 11/10/2016 4:30 1.7 Antield 1.2 466,129.58 HF ALKYLATION ALKY FEED \$214408.D 11/10/2016 4:30 1.7 Antield 1.2 466,129.58 HF ALKYLATION ALKY FEED \$214608.D 11/10/2016 4:30 1.7 Antield 1.2 466,129.58 HF ALKYLATION ALKY FEED \$214608.D 11/10/2016 4:30 1.7 Antield 1.1 466,129.88 HF ALKYLATION ALKY FEED \$214608.D 11/10/2016 4:30 1.7 Antield 1.1 466,129.88 HF ALKYLATION ALKY FEED \$214608.D 11/10/2016 4:30 1.7 Antield 1.0 466,129.58 HF ALKYLATION ALKY FEED \$214608.D 11/10/2016 4:30 1.2 Antield 1.3 466,129.68 HF ALKYLATION ALKY FEED \$214608.D 11/1 | | | S2139007.D | | | | | | | 5.7 |
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| HF ALKYATION ALKY FEED S2140291.D 117/2016 4:30 1.9 Antickid 1.3 446,129:37 HF ALKYATION ALKY FEED S2140555.D 11/8/2016 4:30 1.4 Antickid 1.0 446,129:38 HF ALKYATION ALKY FEED S2140859.D 17/8/2016 4:30 1.4 Antickid 1.0 446,129:38 HF ALKYATION ALKY FEED S2141406.D 11/10/2016 4:30 3.5 Antickid 1.5 446,129:36 HF ALKYATION ALKY FEED S2141406.D 11/10/2016 4:30 3.5 Antickid 1.5 446,129:36 HF ALKYATION ALKY FEED S214164.D 11/10/2016 4:30 3.5 Antickid 1.5 446,129:36 HF ALKYATION ALKY FEED S214164.D 11/10/2016 4:30 3.6 Antickid 1.2 446,129:36 HF ALKYATION ALKY FEED S214164.D 11/10/2016 4:30 3.6 Antickid 1.2 446,129:36 HF ALKYATION ALKY FEED S2142702.D 11/10/2016 4:30 3.6 Antickid 1.2 446,129:36 HF ALKYATION ALKY FEED S2142702.D 11/10/2016 4:30 3.0 Antickid 1.2 446,129:36 HF ALKYATION ALKY FEED S2142349.D 11/10/2016 4:30 3.0 Antickid 1.2 446,129:36 HF ALKYATION ALKY FEED S2144371.D 11/20/2016 4:30 3.3 Antickid 1.2 446,129:36 HF ALKYATION ALKY FEED S2144371.D 11/20/2016 4:30 3.3 Antickid 1.2 446,129:36 HF ALKYATION ALKY FEED S2144371.D 11/20/2016 4:30 3.3 Antickid 1.2 446,129:36 HF ALKYATION ALKY FEED S2144371.D 11/20/2016 4:30 3.3 Antickid 1.2 446,129:36 HF ALKYATION ALKY FEED S2144371.D 11/20/2016 4:30 3.3 Antickid 1.2 446,129:36 HF ALKYATION ALKY FEED S2144371.D 11/20/2016 4:30 1.7 Antickid 1.2 446,129:36 HF ALKYATION ALKY FEED S2145874.D 11/20/2016 4:30 1.7 Antickid 1.2 446,129:36 HF ALKYATION ALKY FEED S2145874.D 11/20/2016 4:30 1.7 Antickid 1.2 446,129:36 HF ALKYATION ALKY FEED S2145874.D 11/20/2016 4:30 1.2 Antickid 1.0 466,129:36 HF ALKYATION ALKY FEED S2145870.D 11/20/2016 4:30 1.2 Antickid 1.0 466,129:36 HF ALKYATION ALKY FEED S2145870.D 11/20/2016 4:30 1.2 Antickid 1.0 466,129:36 HF ALKYATION ALKY FEED S2145870.D 11/20/2016 4:30 1.1 Antickid 1.9 446,129:36 HF ALKYATION ALKY FEED S2145870.D 11/20/2016 4:30 1.1 Antickid 1.9 446,129:36 HF ALKYATION ALKY FEED S2145870.D 11/20/2016 4:30 1.1 Antickid 1.9 446,129:36 HF ALKYATION ALKY FEED S2145870.D 12/20/2016 4:30 1.2 Antickid 1.9 Antickid 1.9 446,129:36 HF ALKYATION | HF ALKYLATION | ALKY FEED | S2139803.D | 11/5/2016 | 4:30 | 1.8 | Antek#2 | 1.3 | 446,129.772 | 2.8 |
| HF ALKYLATION ALKY FEED S2140859.D 11/7/2016 4:30 1.9 Ante-Mrt 1.4 445,1229.M HF ALKYLATION ALKY FEED S2140859.D 11/8/2016 4:30 2.5 Ante-Mrt 1.8 446,1229.M HF ALKYLATION ALKY FEED S2141408.D 11/13/2016 4:30 2.5 Ante-Mrt 1.8 446,1229.M HF ALKYLATION ALKY FEED S2141408.D 11/13/2016 4:30 3.5 Ante-Mrt 2.5 446,1229.M HF ALKYLATION ALKY FEED S2141684.D 11/13/2016 4:30 3.6 Ante-Mrt 2.6 446,1229.M HF ALKYLATION ALKY FEED S2141684.D 11/13/2016 4:30 3.6 Ante-Mrt 2.6 446,1229.M HF ALKYLATION ALKY FEED S2141860.D 11/13/2016 4:30 3.4 Ante-Mrt 2.6 446,1229.M HF ALKYLATION ALKY FEED S214209.D 11/13/2016 4:30 3.4 Ante-Mrt 2.1 446,1229.M HF ALKYLATION ALKY FEED S214209.D 11/13/2016 4:30 3.0 Ante-Mrt 2.1 446,1229.M HF ALKYLATION ALKY FEED S214395.D 11/13/2016 4:30 1.7 Ante-Mrt 2.1 446,1229.M HF ALKYLATION ALKY FEED S2144087.D 11/13/2016 4:30 1.7 Ante-Mrt 2.1 2.4 446,1229.M HF ALKYLATION ALKY FEED S2144087.D 11/23/2016 4:30 3.3 Ante-Mrt 2.1 2.4 446,1229.M HF ALKYLATION ALKY FEED S2144087.D 11/23/2016 4:30 2.9 Ante-Mrt 2.0 446,1229.M HF ALKYLATION ALKY FEED S2144087.D 11/23/2016 4:30 2.9 Ante-Mrt 2.0 446,1229.M HF ALKYLATION ALKY FEED S2144087.D 11/23/2016 4:30 1.7 Ante-Mrt 2.0 446,1229.M HF ALKYLATION ALKY FEED S2145074.D 11/23/2016 4:30 1.7 Ante-Mrt 1.2 446,1229.M HF ALKYLATION ALKY FEED S2145074.D 11/23/2016 4:30 1.2 Ante-Mrt 1.2 446,1229.M HF ALKYLATION ALKY FEED S2145074.D 11/23/2016 4:30 1.2 Ante-Mrt 1.0 446,1229.M HF ALKYLATION ALKY FEED S2145074.D 11/23/2016 4:30 1.2 Ante-Mrt 1.0 446,1229.M HF ALKYLATION ALKY FEED S2145072.D 11/23/2016 4:30 1.2 Ante-Mrt 1.0 446,1229.M HF ALKYLATION ALKY FEED S2145072.D 11/23/2016 4:30 1.2 Ante-Mrt 1.0 446,1229.M HF ALKYLATION ALKY FEED S2145072.D 11/23/2016 4:30 1.2 Ante-Mrt 1.0 446,1229.M HF ALKYLATION ALKY FEED S2145072.D 11/23/2016 4:30 1.2 Ante-Mrt 1.0 446,1229.M HF ALKYLATION ALKY FEED S214507.D 11/23/2016 4:30 1.2 Ante-Mrt 1.9 446,1229.M HF ALKYLATION ALKY FEED S214507.D 12/23/2016 4:30 1.2 Ante-Mrt 1.0 446,1229.M HF ALKYLATION ALKY FEED S214507.D 12/23/2016 4:30 1.2 Ante-Mrt 1.1 446 | | ALKY FEED | S2140009.D | 11/6/2016 | 4:30 | 1.9 | Antek#2 | | 446,129.736 | 3.0 |
| HF ALKYLATION ALKY FEED \$2141402.D 11/19/2016 4:30 2.5 Antekirt 1.8 446,129.64 HF ALKYLATION ALKY FEED \$2141402.D 11/11/2016 4:30 3.5 Antekirt 2.5 446,129.64 HF ALKYLATION ALKY FEED \$2141406.D 11/11/2016 4:30 3.5 Antekirt 2.6 446,128.04 HF ALKYLATION ALKY FEED \$2141604.D 11/11/2016 4:30 3.6 Antekirt 2.4 446,128.04 HF ALKYLATION ALKY FEED \$214102.D 11/11/2016 4:30 3.0 Antekirt 2.4 466,128.04 HF ALKYLATION ALKY FEED \$214202.D 11/11/2016 4:30 3.0 Antekirt 2.1 446,129.04 HF ALKYLATION ALKY FEED \$2142349.D 11/10/2016 4:30 1.7 Antekirt 2.1 446,129.07 HF ALKYLATION ALKY FEED \$214395.D 11/21/2016 4:30 4.2 Antekirt 2.1 446,129.07 HF ALKYLATION ALKY FEED \$2144391.D 11/22/2016 4:30 3.3 Antekirt 2.4 466,129.07 HF ALKYLATION ALKY FEED \$2144391.D 11/22/2016 4:30 2.9 Antekirt 2.4 466,129.07 HF ALKYLATION ALKY FEED \$2144391.D 11/22/2016 4:30 2.9 Antekirt 1.2 446,129.07 HF ALKYLATION ALKY FEED \$2144391.D 11/22/2016 4:30 1.7 Antekirt 2.0 446,129.07 HF ALKYLATION ALKY FEED \$2144391.D 11/22/2016 4:30 1.7 Antekirt 1.2 446,129.07 HF ALKYLATION ALKY FEED \$2144391.D 11/22/2016 4:30 1.7 Antekirt 1.2 446,129.07 HF ALKYLATION ALKY FEED \$2144591.D 11/22/2016 4:30 1.7 Antekirt 1.2 446,129.07 HF ALKYLATION ALKY FEED \$214539.D 11/22/2016 4:30 1.5 Antekirt 1.0 446,129.07 HF ALKYLATION ALKY FEED \$214539.D 11/22/2016 4:30 1.5 Antekirt 1.0 446,129.07 HF ALKYLATION ALKY FEED \$214539.D 11/22/2016 4:30 1.5 Antekirt 1.0 446,129.07 HF ALKYLATION ALKY FEED \$214652.D 11/22/2016 4:30 1.2 Antekirt 1.0 466,129.07 HF ALKYLATION ALKY FEED \$214652.D 11/22/2016 4:30 1.2 Antekirt 1.0 466,129.07 HF ALKYLATION ALKY FEED \$214652.D 11/22/2016 4:30 1.2 Antekirt 1.0 466,129.07 HF ALKYLATION ALKY FEED \$214652.D 11/22/2016 4:30 1.2 Antekirt 1.0 466,129.07 HF ALKYLATION ALKY FEED \$214652.D 11/22/2016 4:30 1.2 Antekirt 1.0 466,129.07 HF ALKYLATION ALKY FEED \$214652.D 11/22/2016 4:30 1.2 Antekirt 1.0 466,129.07 HF ALKYLATION ALKY FEED \$214652.D 11/22/2016 4:30 1.0 Antekirt 1.1 466,129.07 HF ALKYLATION ALKY FEED \$214652.D 11/22/2016 4:30 1.0 Antekirt 1.1 466,129.07 HF ALK | HF ALKYLATION | ALKY FEED | | 11/7/2016 | 4:30 | 1.9 | Antek#1 | 1.4 | 446,129.701 | 3.1 |
| HF ALKYLATION ALKY FEED S2141406_D 11/10/2016 4:30 3.5 Antek#1 2.5 446,129.50 HF ALKYLATION ALKY FEED S2141640_D 11/10/2018 4:30 3.6 Antek#1 2.5 446,129.50 HF ALKYLATION ALKY FEED S2141680_D 11/10/2016 4:30 3.4 Antek#1 2.4 446,129.50 HF ALKYLATION ALKY FEED S2142340_D 11/10/2016 4:30 3.4 Antek#1 2.1 446,129.50 HF ALKYLATION ALKY FEED S2142340_D 11/10/2016 4:30 3.0 Antek#1 2.1 446,129.50 HF ALKYLATION ALKY FEED S2142340_D 11/10/2016 4:30 1.7 Antek#2 3.0 46,128.60 HF ALKYLATION ALKY FEED S21443852_D 11/10/2016 4:30 3.3 Antek#1 2.0 446,129.50 HF ALKYLATION ALKY FEED S2144391_D 11/20/2016 4:30 3.3 Antek#1 2.0 446,129.50 HF ALKYLATION ALKY FEED S2144371_D 11/20/2016 4:30 3.3 Antek#1 2.0 446,129.50 HF ALKYLATION ALKY FEED S2144391_D 11/20/2016 4:30 3.3 Antek#1 2.0 446,129.50 HF ALKYLATION ALKY FEED S2144690_D 11/20/2016 4:30 1.7 Antek#2 0.9 446,130.50 HF ALKYLATION ALKY FEED S2144590_D 11/20/2016 4:30 1.7 Antek#1 0.9 446,130.50 HF ALKYLATION ALKY FEED S2144591_D 11/20/2016 4:30 1.2 Antek#1 1.1 446,129.80 HF ALKYLATION ALKY FEED S2144591_D 11/20/2016 4:30 1.2 Antek#1 1.1 446,129.80 HF ALKYLATION ALKY FEED S2145374_D 11/20/2016 4:30 1.2 Antek#1 0.9 446,130.50 HF ALKYLATION ALKY FEED S2145520_D 11/20/2016 4:30 1.4 Antek#1 0.9 446,130.50 HF ALKYLATION ALKY FEED S2145520_D 11/20/2016 4:30 1.4 Antek#1 0.8 446,130.80 HF ALKYLATION ALKY FEED S2145652_D 12/20/2016 4:30 1.1 Antek#1 0.8 446,130.80 HF ALKYLATION ALKY FEED S214652_D 12/20/2016 4:30 0.2 Antek#1 0.8 446,130.80 HF ALKYLATION ALKY FEED S2146652_D 12/20/2016 4:30 0.2 Antek#1 0.8 446,130.80 HF ALKYLATION ALKY FEED S2146652_D 12/20/2016 4:30 0.2 Antek#1 0.8 446,130.80 HF ALKYLATION ALKY FEED S2146652_D 12/20/2016 4:30 0.2 Antek#1 0.8 446,130.80 HF ALKYLATION ALKY FEED S2146660_D 12/20/2016 4:30 0.2 Antek#1 0.8 446,130.80 HF ALKYLATION ALKY FEED S2146660_D 12/20/2016 4:30 0.2 Antek#1 0.8 Antek#1 0.8 446,130.80 HF ALKYLATION ALKY FEED S2146660_D 12/20/2016 4:30 0.4 Antek#1 0.3 Antek#1 0.8 446,130.80 HF ALKYLATION ALKY FEED | HF ALKYLATION | ALKY FEED | | | | | Antek#2 | 1.0 | 446,129.942 | 2.2 |
| HF ALKYLATION ALKY FEED S2141646.D 11/11/2016 4:30 3.5 Antlew#1 2.5 445,129.0C 445,129.0 | HF ALKYLATION | ALKY FEED | | | | | Antek#1 | 1.8 | 445,129.469 | 3.9 |
| HF ALKYLATION ALKY FEED S214/1860 D 11/13/2016 4:30 3.4 Anlek#1 2.6 446,128.96 HF ALKYLATION ALKY FEED S214/202.D 11/14/2016 4:30 3.4 Anlek#1 2.1 446,129.06 HF ALKYLATION ALKY FEED S214/204.D 11/15/2016 4:30 1.7 Anlek#2 1.2 446,129.07 HF ALKYLATION ALKY FEED S214/204.D 11/15/2016 4:30 1.7 Anlek#2 1.2 446,129.07 HF ALKYLATION ALKY FEED S214/204.D 11/15/2016 4:30 3.3 Anlek#1 2.1 446,129.07 HF ALKYLATION ALKY FEED S214/4097.D 11/23/2016 4:30 3.3 Anlek#1 2.4 446,129.07 HF ALKYLATION ALKY FEED S214/4097.D 11/23/2016 4:30 1.7 Anlek#1 2.0 446,129.07 HF ALKYLATION ALKY FEED S214/4097.D 11/23/2016 4:30 1.7 Anlek#1 2.0 446,129.07 HF ALKYLATION ALKY FEED S214/4097.D 11/25/2016 4:30 1.2 Anlek#1 2.0 446,129.07 HF ALKYLATION ALKY FEED S214/5074.D 11/25/2016 4:30 1.2 Anlek#1 1.1 446,129.07 HF ALKYLATION ALKY FEED S214/5074.D 11/25/2016 4:30 1.2 Anlek#1 1.1 446,129.07 HF ALKYLATION ALKY FEED S214/5074.D 11/25/2016 4:30 1.5 Anlek#1 1.1 446,129.07 HF ALKYLATION ALKY FEED S214/5074.D 11/25/2016 4:30 1.4 Anlek#1 0.9 446,130.07 HF ALKYLATION ALKY FEED S214/5074.D 11/25/2016 4:30 1.4 Anlek#1 0.9 446,130.07 HF ALKYLATION ALKY FEED S214/5074.D 11/25/2016 4:30 1.4 Anlek#1 0.9 446,130.07 HF ALKYLATION ALKY FEED S214/5074.D 11/25/2016 4:30 1.1 Anlek#1 0.9 446,130.07 HF ALKYLATION ALKY FEED S214/5074.D 11/25/2016 4:30 1.1 Anlek#1 0.9 446,130.07 HF ALKYLATION ALKY FEED S214/5074.D 12/2/2016 4:30 2.7 Anlek#1 1.9 446,129.07 HF ALKYLATION ALKY FEED S214/5074.D 12/2/2016 4:30 2.7 Anlek#1 1.9 446,129.07 HF ALKYLATION ALKY FEED S214/508.D 12/2/2016 4:30 2.7 Anlek#1 0.0 446,129.07 HF ALKYLATION ALKY FEED S214/508.D 12/2/2016 4:30 0.7 Anlek#1 0.0 446,129.07 HF ALKYLATION ALKY FEED S214/509.D 12/2/2016 4:30 0.7 Anlek#1 0.0 446,129.07 HF ALKYLATION ALKY FEED S214/509.D 12/2/2016 4:30 0.7 Anlek#1 0.0 Anlek#1 0.3 446,130.07 HF ALKYLATION ALKY FEED S214/509.D 12/2/2016 4:30 0.7 Anlek#1 1.1 446,129.07 HF ALKYLATION ALKY FEED S214/509.D 12/2/2016 4:30 0.7 Anlek#1 1.1 446,129.07 HF ALKYLATION ALKY FEED S214/509.D 12/2/2016 4:30 0.7 Anlek#1 1.1 446,129.07 | HF ALKYLATION | | | | | | | | 445,129.647 | 3.3 |
| HF ALKYLATION ALKY FEED S214/860 D 11/13/2016 4:30 3.4 Aniek#1 2.4 446,129.06 HF ALKYLATION ALKY FEED S214/202.D 11/15/2016 4:30 3.0 7. Aniek#2 1.2 446,129.06 HF ALKYLATION ALKY FEED S214/203.D 11/15/2016 4:30 1.7 Aniek#2 3.0 446,128.06 HF ALKYLATION ALKY FEED S214/4087.D 11/22/2016 4:30 3.3 Aniek#2 3.0 Aniek#2 1.2 446,129.07 HF ALKYLATION ALKY FEED S214/4087.D 11/22/2016 4:30 3.3 Aniek#2 2.0 446,129.07 HF ALKYLATION ALKY FEED S214/4628.D 11/22/2016 4:30 2.9 Aniek#1 2.0 446,129.07 HF ALKYLATION ALKY FEED S214/4628.D 11/22/2016 4:30 1.7 Aniek#1 1.2 466,129.07 HF ALKYLATION ALKY FEED S214/4628.D 11/22/2016 4:30 1.2 Aniek#1 0.9 446,129.07 HF ALKYLATION ALKY FEED S214/5374.D 11/25/2016 4:30 1.2 Aniek#1 1.0 446,129.07 HF ALKYLATION ALKY FEED S214/5374.D 11/26/2016 4:30 1.5 Aniek#1 1.0 446,129.07 HF ALKYLATION ALKY FEED S214/5374.D 11/26/2016 4:30 1.5 Aniek#1 0.9 446,130.07 HF ALKYLATION ALKY FEED S214/5374.D 11/26/2016 4:30 1.4 Aniek#1 0.9 446,130.07 HF ALKYLATION ALKY FEED S214/5872.D 11/26/2016 4:30 1.2 Aniek#1 0.9 446,130.07 HF ALKYLATION ALKY FEED S214/5872.D 11/26/2016 4:30 1.2 Aniek#1 0.9 446,130.07 HF ALKYLATION ALKY FEED S214/6652.D 11/26/2016 4:30 1.2 Aniek#1 0.9 446,130.07 HF ALKYLATION ALKY FEED S214/6652.D 11/26/2016 4:30 2.7 Aniek#1 1.8 446,129.41 HF ALKYLATION ALKY FEED S214/6652.D 12/2/2016 4:30 2.7 Aniek#1 0.9 Aniek#1 0.9 446,130.07 HF ALKYLATION ALKY FEED S214/669.D 12/2/2016 4:30 2.7 Aniek#1 0.9 Aniek#1 0.9 Aniek#1 1.9 Aniek#1 0.9 Aniek#1 0.9 Aniek#1 1.9 Aniek#1 0.9 Aniek#1 0.9 Aniek#1 1.9 Aniek#1 0.9 An | HF ALKYLATION | ALKY FEED | | | | | | 2.5 | 446,129.000 | 5,6 |
| HF ALKYLATION ALKY FEED S2142349.D 1171472016 4:30 3.0 Aniek#1 2.1 446,129.54 Aniek#2 1.2 446,129.55 Aniek#2 1.2 446,129.55 Aniek#2 1.2 446,129.55 Aniek#2 1.2 446,129.55 Aniek#2 1.2 446,129.55 Aniek#2 1.2 446,129.55 Aniek#2 1.2 446,129.55 Aniek#2 1.2 446,129.55 Aniek#2 1.2 446,129.55 Aniek#2 1.2 446,129.55 Aniek#2 1.2 446,129.55 Aniek#2 1.2 446,129.55 Aniek#2 1.2 446,129.55 Aniek#1 2.4 446,129.55 Aniek#2 1.2 446,129.55 Aniek#2 1.2 446,129.55 Aniek#2 1.2 446,129.55 Aniek#2 1.2 446,129.55 Aniek#1 1.2 4 | | 1 | | | | | | | 446,128.964 | 5.8 |
| HF ALKYLATION ALKY FEED S2144395_D 11/12/2016 4:30 4:30 4.2 Aniek#2 3.0 446,129.75 HF ALKYLATION ALKY FEED S2144087.D 11/22/2016 4:30 3.3 Aniek#1 2.4 446,129.05 HF ALKYLATION ALKY FEED S2144087.D 11/22/2016 4:30 2.9 Aniek#1 1.2 Aniek#2 0.9 446,129.05 HF ALKYLATION ALKY FEED S2144571.D 11/23/2016 4:30 1.7 Aniek#1 1.2 446,129.05 HF ALKYLATION ALKY FEED S2144598.D 11/24/2016 4:30 1.7 Aniek#1 1.2 Aniek#1 1.2 Aniek#1 1.2 Aniek#1 1.2 Aniek#1 1.2 Aniek#1 1.2 Aniek#1 1.0 446,129.05 HF ALKYLATION ALKY FEED S2145149.D 11/26/2016 4:30 1.5 Aniek#1 1.0 446,129.05 HF ALKYLATION ALKY FEED S2145374.D 11/27/2016 4:30 1.5 Aniek#1 1.0 446,129.05 HF ALKYLATION ALKY FEED S2145374.D 11/27/2016 4:30 1.2 Aniek#1 1.0 446,129.05 HF ALKYLATION ALKY FEED S2145374.D 11/27/2016 4:30 1.2 Aniek#1 0.9 446,130.05 1.4 Aniek#1 0.9 446,130.05 1.7 Aniek#1 1.0 446,129.05 HF ALKYLATION ALKY FEED S214672.D 11/29/2016 4:30 1.1 Aniek#1 0.8 446,130.05 1.1 Aniek#1 0.8 | | | | | | | | | 446,129.040 | 5.5 |
| HF ALKYLATION ALKY FEED S214497.D 11/22/2016 H30 3.3 Anlak#1 2.4 446,129.5E HF ALKYLATION ALKY FEED S214497.D 11/22/2016 H30 1.7 Anlak#1 2.0 446,129.5E HF ALKYLATION ALKY FEED S214497.D 11/22/2016 4:30 1.7 Anlak#1 1.2 446,129.5E HF ALKYLATION ALKY FEED S214497.D 11/25/2016 4:30 1.2 Anlak#1 1.1 446,129.5E HF ALKYLATION ALKY FEED S2145934.D 11/25/2016 4:30 1.5 Anlak#1 1.1 446,129.5E HF ALKYLATION ALKY FEED S2145937.D 11/25/2016 4:30 1.5 Anlak#1 1.0 446,129.5E HF ALKYLATION ALKY FEED S214592.D 11/25/2016 4:30 1.1 Anlak#1 1.0 446,129.5E HF ALKYLATION ALKY FEED S214592.D 11/25/2016 4:30 1.1 Anlak#1 0.9 446,130.0I HF ALKYLATION ALKY FEED S214592.D 11/25/2016 4:30 1.1 Anlak#1 0.9 446,130.0I HF ALKYLATION ALKY FEED S214695.D 11/25/2016 4:30 1.1 Anlak#1 0.9 446,130.0I HF ALKYLATION ALKY FEED S214695.D 11/25/2016 4:30 2.6 Anlak#1 1.8 446,129.4I HF ALKYLATION ALKY FEED S214695.D 12/2/2016 4:30 2.7 Anlak#1 1.9 446,129.8F HF ALKYLATION ALKY FEED S214695.D 12/2/2016 4:30 2.7 Anlak#1 1.9 446,129.8F HF ALKYLATION ALKY FEED S214794.D 12/2/2016 4:30 2.7 Anlak#1 1.9 446,129.8F HF ALKYLATION ALKY FEED S214794.D 12/2/2016 4:30 2.7 Anlak#1 0.9 446,129.8F 446,129.8F HF ALKYLATION ALKY FEED S214794.D 12/2/2016 4:30 2.7 Anlak#1 0.9 446,129.8F 446 | | 1 | | | | | | | 446,129.246 | 4.7 |
| HF ALKYLATION ALKY FEED S2144371.D 11/23/2016 4:30 2.9 Antek#1 2.0 46,129.56 HF ALKYLATION ALKY FEED S2144371.D 11/23/2016 4:30 2.9 Antek#1 2.0 46,129.56 HF ALKYLATION ALKY FEED S2144671.D 11/23/2016 4:30 1.7 Antek#1 1.2 Antek#1 1.2 Antek#1 1.2 Antek#1 1.1 46,129.56 HF ALKYLATION ALKY FEED S2144574.D 11/25/2016 4:30 1.5 Antek#1 1.1 46,129.56 HF ALKYLATION ALKY FEED S2145374.D 11/26/2016 4:30 1.5 Antek#1 1.0 46,129.56 HF ALKYLATION ALKY FEED S2145374.D 11/26/2016 4:30 1.2 Antek#1 0.9 46,130.01 HF ALKYLATION ALKY FEED S2145374.D 11/26/2016 4:30 1.1 Antek#1 0.9 46,130.01 HF ALKYLATION ALKY FEED S214532.D 11/26/2016 4:30 1.1 Antek#1 0.8 446,130.01 HF ALKYLATION ALKY FEED S214512.D 11/26/2016 4:30 2.6 Antek#1 1.8 446,129.36 HF ALKYLATION ALKY FEED S214612.D 11/26/2016 4:30 2.7 Antek#1 1.9 46,129.36 HF ALKYLATION ALKY FEED S214712.D 12/2/2016 4:30 2.7 Antek#1 2.0 46,129.36 HF ALKYLATION ALKY FEED S214712.D 12/2/2016 4:30 2.7 Antek#1 2.0 46,129.36 HF ALKYLATION ALKY FEED S21477404.D 12/2/2016 4:30 2.9 Antek#1 2.0 46,129.36 HF ALKYLATION ALKY FEED S21477404.D 12/2/2016 4:30 0.4 Antek#1 0.3 46,130.38 HF ALKYLATION ALKY FEED S21477404.D 12/2/2016 4:30 0.4 Antek#1 0.3 46,130.38 HF ALKYLATION ALKY FEED S21477404.D 12/2/2016 4:30 0.4 Antek#1 0.3 46,130.38 HF ALKYLATION ALKY FEED S214712.D 12/2/2016 4:30 0.4 Antek#1 0.3 46,130.38 HF ALKYLATION ALKY FEED S214789.D 12/2/2016 4:30 0.4 Antek#1 0.3 46,130.38 HF ALKYLATION ALKY FEED S214789.D 12/2/2016 4:30 0.4 Antek#1 0.3 46,130.38 46,130.38 HF ALKYLATION ALKY FEED S214789.D 12/2/2016 4:30 0.4 Antek#1 0.3 46,129.36 HF ALKYLATION ALKY FEED S2148679.D 12/2/2016 4:30 0.7 Antek#1 0.3 Antek#1 0.3 46,130.38 12/2/2016 4:30 0.4 Antek#1 0.3 Antek#1 0.3 Antek#1 0.3 Antek#1 0.3 Antek#1 1.1 46,129.7 HF ALKYLATION ALKY FEED S2148679.D 12/2/2016 4:30 0.7 Antek#1 1.9 Antek#1 1. | | | | | | | | | 446,129.794 | 2.8 |
| HF ALKYLATION ALKY FEED S2144673.D 11/23/2016 4:30 1.7 Antek#1 1.2 446,129.58 HF ALKYLATION ALKY FEED S2144678.D 11/24/2016 4:30 1.7 Antek#1 1.2 446,129.58 HF ALKYLATION ALKY FEED S2145149.D 11/25/2016 4:30 1.5 Antek#1 1.1 446,129.58 HF ALKYLATION ALKY FEED S2145149.D 11/25/2016 4:30 1.5 Antek#1 1.0 446,129.58 HF ALKYLATION ALKY FEED S2145620.D 11/26/2016 4:30 1.4 Antek#1 1.0 446,129.58 HF ALKYLATION ALKY FEED S2145620.D 11/26/2016 4:30 1.2 Antek#1 0.9 446,130.08 HF ALKYLATION ALKY FEED S2145620.D 11/26/2016 4:30 1.1 Antek#1 0.8 446,130.08 HF ALKYLATION ALKY FEED S2145652.D 11/26/2016 4:30 1.1 Antek#1 0.8 446,130.08 HF ALKYLATION ALKY FEED S2145652.D 11/26/2016 4:30 2.6 Antek#1 1.8 446,129.58 HF ALKYLATION ALKY FEED S2145652.D 12/2/2016 4:30 2.7 Antek#1 1.9 446,129.58 HF ALKYLATION ALKY FEED S2145652.D 12/2/2016 4:30 2.7 Antek#1 1.9 446,129.58 HF ALKYLATION ALKY FEED S2147649.D 12/2/2016 4:30 2.9 Antek#1 2.0 446,129.58 HF ALKYLATION ALKY FEED S2147649.D 12/2/2016 4:30 2.9 Antek#1 2.0 446,129.58 HF ALKYLATION ALKY FEED S2147749.D 12/2/2016 4:30 0.4 Antek#1 0.3 445,130.38 HF ALKYLATION ALKY FEED S214779.D 12/2/2016 4:30 0.4 Antek#1 0.3 445,130.38 HF ALKYLATION ALKY FEED S214779.D 12/2/2016 4:30 0.4 Antek#1 0.3 445,130.38 HF ALKYLATION ALKY FEED S214579.D 12/2/2016 4:30 0.7 Antek#1 0.3 446,130.38 HF ALKYLATION ALKY FEED S214579.D 12/2/2016 4:30 0.4 Antek#1 0.3 446,130.38 HF ALKYLATION ALKY FEED S214579.D 12/2/2016 4:30 0.4 Antek#1 0.3 446,130.38 HF ALKYLATION ALKY FEED S214579.D 12/2/2016 4:30 0.4 Antek#1 1.7 446,129.57 HF ALKYLATION ALKY FEED S214579.D 12/2/2016 4:30 0.4 Antek#1 1.7 446,129.57 HF ALKYLATION ALKY FEED S214579.D 12/2/2016 4:30 0.4 Antek#1 1.7 446,129.57 HF ALKYLATION ALKY FEED S214577.D 12/2/2016 4:30 0.4 Antek#1 1.7 446,129.57 HF ALKYLATION ALKY FEED S214577.D 12/2/2016 4:30 0.4 Antek#1 1.7 446,129.57 HF ALKYLATION ALKY FEED S214577.D 12/2/2016 4:30 0.1 Antek#1 1.7 446,129.57 HF ALKYLATION ALKY FEED S2150676.D 12/15/2016 4:30 0.1 Antek#1 1.7 446,129.57 HF ALKYLATION ALKY FEED S2150676.D 12/15/2016 | | | | | | | | | | 6.8 |
| HF ALKYLATION ALKY FEED S2144628 D 11/24/2016 4:30 1.7 Aniek#1 1.2 446,129.81 HF ALKYLATION ALKY FEED S21445374 D 11/25/2016 4:30 1.5 Aniek#1 1.1 446,129.85 HF ALKYLATION ALKY FEED S2145374 D 11/25/2016 4:30 1.4 Aniek#1 1.0 446,129.85 HF ALKYLATION ALKY FEED S2145374 D 11/25/2016 4:30 1.2 Aniek#1 1.0 446,129.85 HF ALKYLATION ALKY FEED S2145620 D 11/28/2016 4:30 1.2 Aniek#1 0.9 446,130.08 HF ALKYLATION ALKY FEED S2145620 D 11/28/2016 4:30 1.1 Aniek#1 0.9 446,130.08 HF ALKYLATION ALKY FEED S2146725 D 11/29/2016 4:30 2.6 Aniek#1 1.8 446,130.08 HF ALKYLATION ALKY FEED S2146725 D 11/29/2016 4:30 2.7 Aniek#1 1.9 446,129.35 HF ALKYLATION ALKY FEED S2147128.D 12/4/2016 4:30 2.7 Aniek#1 1.9 446,129.36 HF ALKYLATION ALKY FEED S2147404.D 12/5/2016 4:30 2.9 Aniek#1 2.0 446,129.35 HF ALKYLATION ALKY FEED S2147404.D 12/5/2016 4:30 2.9 Aniek#1 2.0 446,129.35 HF ALKYLATION ALKY FEED S2147404.D 12/5/2016 4:30 2.9 Aniek#1 2.0 446,129.35 HF ALKYLATION ALKY FEED S2147404.D 12/5/2016 4:30 0.4 Aniek#1 0.3 446,130.38 HF ALKYLATION ALKY FEED S214849.D 12/6/2016 4:30 0.4 Aniek#1 0.3 446,130.38 HF ALKYLATION ALKY FEED S214849.D 12/6/2016 4:30 0.7 Aniek#2 0.5 Aniek#2 0.5 Aniek#1 0.8 446,130.38 HF ALKYLATION ALKY FEED S2148679.D 12/6/2016 4:30 0.7 Aniek#1 0.3 Alei,130.38 446,130.38 HF ALKYLATION ALKY FEED S2148679.D 12/6/2016 4:30 0.7 Aniek#2 0.5 Aniek#1 0.6 Aniek#1 0.7 Aniek#2 0.5 Aniek#1 0.7 Aniek#2 0.5 Aniek#1 0.7 Aniek#2 0.5 Aniek#1 0.8 Aniek#1 0.8 Aniek#1 0.8 Aniek#1 0.8 Aniek#1 0.8 Aniek#1 0.8 Aniek#1 0.8 Aniek#1 0.8 Aniek#1 0.8 Aniek#1 0.9 Aniek#1 0.8 Aniek#1 0.9 Aniek#1 0 | | | | | | | | 2.4 | 446,129.094 | 5.3 |
| HF ALKYLATION HE ALKYLED S2144597.D 11/25/2016 H-30 1.2 Antek#1 1.1 A46,129.84 HF ALKYLATION ALKY FEED S214574.D 11/27/2016 H-30 1.5 Antek#1 1.0 446,129.95 HF ALKYLATION ALKY FEED S2145872.D 11/28/2016 H-30 1.1 Antek#1 0.9 A46,130.01 HF ALKYLATION ALKY FEED S2145872.D 11/29/2016 H-30 1.1 Antek#1 0.9 A46,130.01 HF ALKYLATION ALKY FEED S2145872.D 11/29/2016 H-30 2.6 Antek#1 1.8 A46,129.41 HF ALKYLATION ALKY FEED S2146652.D 12/2/2016 H-30 2.7 Antek#1 1.9 A46,129.36 HF ALKYLATION ALKY FEED S2147128.D 12/2/2016 H-30 2.9 Antek#1 2.0 Antek#1 3.0 A46,129.36 HF ALKYLATION ALKY FEED S2147649.D 12/2/2016 H-30 0.4 Antek#1 0.3 A46,128.61 HF ALKYLATION ALKY FEED S2147649.D 12/2/2016 130 0.4 Antek#1 0.3 A46,130.38 HF ALKYLATION ALKY FEED S2147649.D 12/2/2016 130 0.4 Antek#1 0.3 A46,130.38 HF ALKYLATION ALKY FEED S214872.D 12/2/2016 130 0.4 Antek#1 0.3 A46,130.38 HF ALKYLATION ALKY FEED S214872.D 12/2/2016 130 0.4 Antek#1 0.3 A46,130.38 HF ALKYLATION ALKY FEED S214879.D 12/2/2016 130 0.7 Antek#1 0.3 A46,130.38 HF ALKYLATION ALKY FEED S2148679.D 12/2/2016 130 0.7 Antek#1 0.3 At6,130.38 HF ALKYLATION ALKY FEED S2148679.D 12/2/2016 130 0.7 Antek#1 0.3 At6,130.38 HF ALKYLATION ALKY FEED S2148679.D 12/2/2016 130 0.7 Antek#1 0.3 At6,130.38 Antek#2 1.1 At6,129.54 HF ALKYLATION ALKY FEED S2148679.D 12/11/2016 130 0.7 Antek#1 1.7 A46,129.57 HF ALKYLATION ALKY FEED S2148679.D 12/11/2016 130 0.7 Antek#1 1.7 A46,129.57 HF ALKYLATION ALKY FEED S2148679.D 12/11/2016 130 0.7 Antek#1 1.7 A46,129.57 HF ALKYLATION ALKY FEED S2148679.D 12/11/2016 130 0.7 Antek#1 1.7 A46,129.57 HF ALKYLATION ALKY FEED S2148679.D 12/11/2016 130 0.7 Antek#1 1.7 A46,129.57 HF ALKYLATION ALKY FEED S2148679.D 12/11/2016 130 0.7 Antek#1 1.7 A46,129.57 HF ALKYLATION ALKY FEED S2148679.D 12/11/2016 130 0.7 Antek#1 1.7 A46,129.57 HF ALKYLATION ALKY FEED S2148679.D 12/11/2016 130 0.7 Antek#1 1.7 A46,129.57 HF ALKYLATION ALKY FEED S2148679.D 12/11/2016 130 0.7 Antek#1 1.7 A46,129.57 HF ALKYLATION ALKY FEED S2148679.D 12/11/2016 130 0.7 Antek#1 1.7 A46,129.57 HF ALKYLATION A | | | | | | | | • | | 4.6 |
| HF ALKYLATION ALKY FEED S2145374.D 11/27/2016 4:30 1.5 Antek#1 1.1 446,129.86 HF ALKYLATION ALKY FEED S2145620.D 11/28/2016 4:30 1.2 Antek#1 0.9 446,130.08 HF ALKYLATION ALKY FEED S2145672.D 11/28/2016 4:30 1.1 Antek#1 0.8 446,130.08 HF ALKYLATION ALKY FEED S2146852.D 11/29/2016 4:30 2.6 Antek#1 1.9 446,129.36 HF ALKYLATION ALKY FEED S2146852.D 12/2/2016 4:30 2.7 Antek#1 1.9 446,129.36 HF ALKYLATION ALKY FEED S2147128.D 12/4/2016 4:30 2.7 Antek#1 2.0 446,129.36 HF ALKYLATION ALKY FEED S2147128.D 12/4/2016 4:30 2.9 Antek#1 2.0 446,129.36 HF ALKYLATION ALKY FEED S2147649.D 12/6/2016 4:30 3.0 4.2 Antek#1 3.0 446,129.36 HF ALKYLATION ALKY FEED S2147712.D 12/6/2016 4:30 3.0 4.2 Antek#1 3.0 446,129.37 HF ALKYLATION ALKY FEED S2147712.D 12/6/2016 4:30 3.0 4.7 Antek#1 3.0 446,130.38 446,130.38 HF ALKYLATION ALKY FEED S2148439.D 12/6/2016 4:30 3.0 Antek#1 | | | | | | | | | | 2.7 |
| HF ALKYLATION ALKY FEED S2145374.D 11/22/2016 4:30 1.4 Antek#1 0.9 446,130.08 HF ALKYLATION ALKY FEED S2145672.D 11/28/2016 4:30 1.1 Antek#1 0.9 446,130.08 HF ALKYLATION ALKY FEED S2146125.D 11/28/2016 4:30 1.1 Antek#1 0.8 446,130.08 HF ALKYLATION ALKY FEED S2146652.D 11/28/2016 4:30 2.6 Antek#1 1.8 446,130.08 HF ALKYLATION ALKY FEED S2146652.D 11/28/2016 4:30 2.7 Antek#1 1.9 446,130.08 HF ALKYLATION ALKY FEED S2147404.D 12/2/2016 4:30 2.9 Antek#1 2.0 446,130.38 HF ALKYLATION ALKY FEED S2147404.D 12/5/2016 4:30 3.0 Antek#1 0.3 446,130.38 HF ALKYLATION ALKY FEED S2147749.D 12/5/2016 4:30 0.4 Antek#1 0.3 446,130.38 HF ALKYLATION ALKY FEED S214874.D 12/6/2016 4:30 0.4 Antek#1 0.3 Ante | | | | | | | | , | | 2.0 |
| HF ALKYLATION ALKY FEED S2145620 D 11/28/2016 4:30 1.2 Antek#1 0.9 446,130.01 HF ALKYLATION ALKY FEED S2146125 D 11/29/2016 4:30 2.6 Antek#1 1.8 446,129.41 HF ALKYLATION ALKY FEED S2146125 D 11/29/2016 4:30 2.7 Antek#1 1.9 446,129.41 HF ALKYLATION ALKY FEED S2146652 D 12/2/2016 4:30 2.7 Antek#1 2.0 446,129.52 HF ALKYLATION ALKY FEED S2147128 D 12/4/2016 4:30 2.9 Antek#1 2.0 446,129.53 HF ALKYLATION ALKY FEED S2147404 D 12/6/2016 4:30 0.4 Antek#1 0.3 446,129.53 HF ALKYLATION ALKY FEED S2147919 D 12/7/2016 4:30 0.4 Antek#1 0.3 ALKY FEED S2147919 D 12/7/2016 4:30 0.7 Antek#1 0.3 ALKY FEED S214804 D 12/9/2016 4:30 0.7 Antek#2 0.5 Antek#1 0.3 ALKY FEED S214804 D 12/9/2016 4:30 0.7 Antek#2 0.5 Antek#1 0.6 Antek#1 0.7 Antek#2 0.7 Antek#1 0.7 Antek#2 0.7 Antek#2 0.7 Antek#2 0.7 Antek#2 0.7 Antek#2 0.7 Antek#2 0.7 Antek#2 0.7 Antek#1 0.7 Antek#2 0.7 Antek | | | | 1 | | | | | | 2.4 |
| HF ALKYLATION ALKY FEED S2145872.D 11/29/2016 4:30 1.1 Antek#1 0.8 446,130.08 HF ALKYLATION ALKY FEED S2146652.D 11/30/2016 4:30 2.7 Antek#1 1.9 446,129.41 HF ALKYLATION ALKY FEED S2146652.D 12/2/2016 4:30 2.7 Antek#1 1.9 446,129.41 HF ALKYLATION ALKY FEED S2146652.D 12/4/2016 4:30 2.7 Antek#1 2.0 446,129.52 HF ALKYLATION ALKY FEED S2147128.D 12/4/2016 4:30 2.9 Antek#1 2.0 446,129.52 HF ALKYLATION ALKY FEED S2147404.D 12/5/2016 4:30 4.2 Antek#1 0.3 446,128.67 HF ALKYLATION ALKY FEED S2147649.D 12/5/2016 4:30 0.4 Antek#1 0.3 446,130.38 HF ALKYLATION ALKY FEED S2147919.D 12/7/2016 4:30 0.4 Antek#1 0.3 446,130.38 HF ALKYLATION ALKY FEED S2148472.D 12/8/2016 4:30 0.7 Antek#2 0.5 446,130.38 HF ALKYLATION ALKY FEED S2148439.D 12/8/2016 4:30 0.7 Antek#2 2.1 446,130.38 HF ALKYLATION ALKY FEED S2148679.D 12/10/2016 4:30 0.7 Antek#2 2.1 446,129.37 HF ALKYLATION ALKY FEED S2148679.D 12/10/2016 4:30 2.9 Antek#2 2.1 446,129.37 HF ALKYLATION ALKY FEED S2148679.D 12/10/2016 4:30 2.9 Antek#2 2.1 446,129.37 HF ALKYLATION ALKY FEED S2148679.D 12/11/2016 4:30 2.3 Antek#1 1.7 446,129.51 HF ALKYLATION ALKY FEED S2149114.D 12/11/2016 4:30 1.8 Antek#2 1.3 446,129.37 HF ALKYLATION ALKY FEED S2149372.D 12/13/2016 4:30 1.6 Antek#1 1.1 446,129.86 HF ALKYLATION ALKY FEED S2149372.D 12/13/2016 4:30 1.6 Antek#1 1.1 446,129.86 HF ALKYLATION ALKY FEED S2149372.D 12/13/2016 4:30 1.6 Antek#2 1.8 446,129.47 HF ALKYLATION ALKY FEED S215090.D 12/15/2016 4:30 2.2 Antek#2 1.8 446,129.37 HF ALKYLATION ALKY FEED S215093.D 12/15/2016 4:30 2.2 Antek#2 1.6 446,129.56 HF ALKYLATION ALKY FEED S215093.D 12/15/2016 4:30 2.2 Antek#2 1.1 446,129.86 HF ALKYLATION ALKY FEED S215095.D 12/15/2016 4:30 2.2 Antek#2 1.1 446,129.86 HF ALKYLATION ALKY FEED S21508676.D 12/17/2016 4:30 2.6 Antek#2 1.8 446,129.37 HF ALKYLATION ALKY FEED S215080.D 12/17/2016 4:30 2.6 Antek#2 1.1 446,129.56 HF ALKYLATION ALKY FEED S215080.D 12/17/2016 4:30 2.6 Antek#2 1.1 446,129.56 HF ALKYLATION ALKY FEED S215080.D 12/20/2016 4:30 2.8 Antek#2 1.1 446,129.56 HF ALKYLATION ALKY FEED S2150866 | | | | | | | | | | 2.2 |
| HF ALKYLATION ALKY FEED S2146125.D 11/30/2016 4:30 2.6 Antek#1 1.8 446,129.31 HF ALKYLATION ALKY FEED S214704.D 12/2/2016 4:30 2.7 Antek#1 1.9 446,129.32 HF ALKYLATION ALKY FEED S214704.D 12/2/2016 4:30 2.9 Antek#1 2.0 446,129.32 HF ALKYLATION ALKY FEED S214704.D 12/5/2016 4:30 4.2 Antek#2 3.0 446,128.63 HF ALKYLATION ALKY FEED S2147919.D 12/6/2016 4:30 0.4 Antek#1 0.3 446,130.33 HF ALKYLATION ALKY FEED S2148712.D 12/6/2016 4:30 0.4 Antek#1 0.3 446,130.33 HF ALKYLATION ALKY FEED S2148872.D 12/6/2016 4:30 0.7 Antek#2 0.5 446,130.32 HF ALKYLATION ALKY FEED S2148879.D 12/6/2016 4:30 0.7 Antek#2 2.1 446,130.32 HF ALKYLATION ALKY FEED S2148877.D 12/10/2016 4:30 0.7 Antek#2 2.1 446,130.33 HF ALKYLATION ALKY FEED S2148877.D 12/10/2016 4:30 0.9 Antek#2 2.1 446,130.33 HF ALKYLATION ALKY FEED S2148877.D 12/11/2016 4:30 0.3 Antek#1 1.7 446,129.37 HF ALKYLATION ALKY FEED S2148877.D 12/11/2016 4:30 0.3 Antek#1 1.7 446,129.37 HF ALKYLATION ALKY FEED S2148877.D 12/11/2016 4:30 0.3 Antek#1 1.7 446,129.37 HF ALKYLATION ALKY FEED S2149372.D 12/13/2016 4:30 1.8 Antek#2 1.3 446,129.37 HF ALKYLATION ALKY FEED S2149372.D 12/13/2016 4:30 1.6 Antek#1 1.1 446,129.86 HF ALKYLATION ALKY FEED S2149372.D 12/13/2016 4:30 1.6 Antek#1 1.1 446,129.86 HF ALKYLATION ALKY FEED S2149372.D 12/13/2016 4:30 1.6 Antek#1 1.1 446,129.87 HF ALKYLATION ALKY FEED S2150676.D 12/15/2016 4:30 2.6 Antek#2 1.8 446,129.37 HF ALKYLATION ALKY FEED S2150676.D 12/15/2016 4:30 2.6 Antek#2 1.8 446,129.32 HF ALKYLATION ALKY FEED S2150676.D 12/15/2016 4:30 2.6 Antek#2 1.8 446,129.32 HF ALKYLATION ALKY FEED S2150676.D 12/15/2016 4:30 2.6 Antek#2 1.8 446,129.32 HF ALKYLATION ALKY FEED S215068.D 12/15/2016 4:30 2.6 Antek#2 1.8 446,129.32 HF ALKYLATION ALKY FEED S215068.D 12/15/2016 4:30 2.6 Antek#2 1.8 446,129.32 HF ALKYLATION ALKY FEED S215068.D 12/15/2016 4:30 2.6 Antek#2 1.8 446,129.32 HF ALKYLATION ALKY FEED S215068.D 12/15/2016 4:30 2.6 Antek#2 1.3 446,129.32 HF ALKYLATION ALKY FEED S215068.D 12/25/2016 4:30 2.8 Antek#2 1.3 446,129.32 HF ALKYLATION ALKY FEED S215068.D | | | | | | | | | | 2.0 |
| HF ALKYLATION ALKY FEED S2146652.D 12/2/2016 4:30 2.7 Antek#1 1.9 446,129.26 HF ALKYLATION ALKY FEED S21477404.D 12/4/2016 4:30 4.2 Antek#1 2.0 446,129.26 HF ALKYLATION ALKY FEED S2147649.D 12/6/2016 4:30 0.4 Antek#1 0.3 446,130.38 HF ALKYLATION ALKY FEED S2147649.D 12/6/2016 4:30 0.4 Antek#1 0.3 446,130.38 HF ALKYLATION ALKY FEED S214872.D 12/6/2016 4:30 0.4 Antek#1 0.3 446,130.38 HF ALKYLATION ALKY FEED S214872.D 12/6/2016 4:30 0.7 Antek#2 0.5 446,130.38 HF ALKYLATION ALKY FEED S214872.D 12/6/2016 4:30 0.7 Antek#2 2.1 446,129.27 HF ALKYLATION ALKY FEED S2148679.D 12/10/2016 4:30 3.0 Antek#2 2.1 446,129.27 HF ALKYLATION ALKY FEED S2148679.D 12/10/2016 4:30 2.9 Antek#2 2.1 446,129.27 HF ALKYLATION ALKY FEED S2148679.D 12/10/2016 4:30 2.3 Antek#2 1.3 446,129.77 HF ALKYLATION ALKY FEED S2149114.D 12/12/2016 4:30 1.8 Antek#2 1.3 446,129.77 HF ALKYLATION ALKY FEED S2149372.D 12/13/2016 4:30 1.8 Antek#2 1.3 446,129.78 HF ALKYLATION ALKY FEED S2149372.D 12/13/2016 4:30 1.6 Antek#1 1.1 446,129.86 HF ALKYLATION ALKY FEED S2149372.D 12/13/2016 4:30 1.6 Antek#1 1.1 446,129.86 HF ALKYLATION ALKY FEED S2149372.D 12/13/2016 4:30 2.1 Antek#1 1.5 446,129.86 HF ALKYLATION ALKY FEED S2149372.D 12/13/2016 4:30 2.1 Antek#1 1.5 446,129.86 HF ALKYLATION ALKY FEED S2150200.D 12/16/2016 4:30 2.1 Antek#1 1.5 446,129.86 HF ALKYLATION ALKY FEED S2150200.D 12/16/2016 4:30 2.1 Antek#1 1.1 446,129.86 HF ALKYLATION ALKY FEED S2150200.D 12/16/2016 4:30 2.2 Antek#2 1.6 446,129.37 HF ALKYLATION ALKY FEED S2150200.D 12/16/2016 4:30 2.2 Antek#2 1.1 446,129.86 HF ALKYLATION ALKY FEED S2150200.D 12/16/2016 4:30 2.2 Antek#2 1.6 446,129.37 HF ALKYLATION ALKY FEED S2150200.D 12/16/2016 4:30 2.2 Antek#2 1.1 446,129.86 Antek#2 1.8 446,129.86 Antek#2 1.8 446,129.37 HF ALKYLATION ALKY FEED S215020.D 12/20/2016 4:30 2.6 Antek#2 1.8 446,129.37 HF ALKYLATION ALKY FEED S215020.D 12/20/2016 4:30 2.8 Antek#2 1.3 446,129.37 HF ALKYLATION ALKY FEED S215020.D 12/20/2016 4:30 2.8 Antek#2 1.3 446,129.37 HF ALKYLATION ALKY FEED S215020.D 12/20/2016 4:30 2.8 Antek#2 | | | | | | | | , | | 1.7 |
| HF ALKYLATION ALKY FEED S2147404.D 12/4/2016 4:30 2.9 Antek#1 2.0 446,129.26 HF ALKYLATION ALKY FEED S2147649.D 12/5/2016 4:30 0.4 Antek#1 0.3 446,130.38 HF ALKYLATION ALKY FEED S214879.D 12/6/2016 4:30 0.4 Antek#1 0.3 446,130.38 HF ALKYLATION ALKY FEED S2148172.D 12/8/2016 4:30 0.7 Antek#2 0.5 446,130.38 HF ALKYLATION ALKY FEED S2148439.D 12/9/2016 4:30 0.7 Antek#2 0.5 446,130.38 HF ALKYLATION ALKY FEED S2148439.D 12/9/2016 4:30 0.7 Antek#2 2.1 446,129.24 HF ALKYLATION ALKY FEED S2148679.D 12/10/2016 4:30 2.9 Antek#2 2.1 446,129.24 HF ALKYLATION ALKY FEED S2148877.D 12/10/2016 4:30 2.9 Antek#1 1.7 446,129.54 HF ALKYLATION ALKY FEED S2148877.D 12/11/2016 4:30 2.3 Antek#1 1.7 446,129.57 HF ALKYLATION ALKY FEED S2149372.D 12/13/2016 4:30 1.8 Antek#2 1.3 446,129.57 HF ALKYLATION ALKY FEED S2149378.D 12/13/2016 4:30 1.6 Antek#1 1.1 446,129.57 HF ALKYLATION ALKY FEED S2149378.D 12/15/2016 4:30 2.1 Antek#1 1.5 446,129.57 HF ALKYLATION ALKY FEED S2149378.D 12/15/2016 4:30 2.1 Antek#1 1.5 446,129.57 HF ALKYLATION ALKY FEED S2149378.D 12/15/2016 4:30 2.1 Antek#1 1.5 446,129.58 HF ALKYLATION ALKY FEED S21505020.D 12/16/2016 4:30 2.1 Antek#2 1.8 446,129.56 HF ALKYLATION ALKY FEED S2150676.D 12/17/2016 4:30 2.2 Antek#2 1.6 446,129.57 HF ALKYLATION ALKY FEED S2150676.D 12/17/2016 4:30 2.2 Antek#2 1.6 446,129.57 HF ALKYLATION ALKY FEED S2150676.D 12/17/2016 4:30 2.2 Antek#2 1.6 446,129.57 HF ALKYLATION ALKY FEED S2150923.D 12/19/2016 4:30 3.1 Antek#2 1.1 446,129.57 HF ALKYLATION ALKY FEED S2151477.D 12/20/2016 4:30 3.1 Antek#2 1.2 446,129.57 HF ALKYLATION ALKY FEED S2151437.D 12/20/2016 4:30 3.1 Antek#2 1.3 446,129.57 HF ALKYLATION ALKY FEED S2151690.D 12/15/2016 4:30 3.1 Antek#2 1.3 446,129.57 HF ALKYLATION ALKY FEED S2151437.D 12/20/2016 4:30 3.1 Antek#2 1.3 446,129.57 HF ALKYLATION ALKY FEED S2151437.D 12/20/2016 4:30 3.1 Antek#2 1.3 446,129.57 HF ALKYLATION ALKY FEED S215143.D 12/20/2016 4:30 3.1 Antek#2 1.3 Antek#2 1.3 446,129.57 HF ALKYLATION ALKY FEED S215140.D 12/20/2016 4:30 1.9 Antek#2 1.4 446,129.57 HF ALKYLATION | | | | | | | | | | 4.1 |
| HF ALKYLATION ALKY FEED S2147404 D 12/5/2016 4:30 4.2 Antek#2 3.0 445,128.67 HF ALKYLATION ALKY FEED S2147649 D 12/6/2016 4:30 0.4 Antek#1 0.3 445,130.38 HF ALKYLATION ALKY FEED S2148172.D 12/6/2016 4:30 0.7 Antek#2 0.5 446,130.38 HF ALKYLATION ALKY FEED S2148172.D 12/6/2016 4:30 0.7 Antek#2 0.5 446,130.38 HF ALKYLATION ALKY FEED S214867.D 12/10/2016 4:30 3.0 Antek#2 2.1 446,129.24 HF ALKYLATION ALKY FEED S214867.D 12/10/2016 4:30 2.9 Antek#2 2.1 446,129.24 HF ALKYLATION ALKY FEED S214867.D 12/11/2016 4:30 2.3 Antek#1 1.7 446,129.57 HF ALKYLATION ALKY FEED S214867.D 12/11/2016 4:30 2.3 Antek#1 1.7 446,129.57 HF ALKYLATION ALKY FEED S214867.D 12/11/2016 4:30 1.8 Antek#2 1.3 446,129.77 HF ALKYLATION ALKY FEED S2149378.D 12/13/2016 4:30 1.6 Antek#1 1.1 446,129.68 HF ALKYLATION ALKY FEED S2149378.D 12/15/2016 4:30 2.1 Antek#1 1.5 446,129.68 HF ALKYLATION ALKY FEED S2150200.D 12/16/2016 4:30 2.1 Antek#1 1.5 446,129.68 HF ALKYLATION ALKY FEED S2150266.D 12/16/2016 4:30 2.2 Antek#2 1.8 446,129.42 HF ALKYLATION ALKY FEED S2150266.D 12/16/2016 4:30 2.2 Antek#2 1.6 446,129.58 HF ALKYLATION ALKY FEED S2150267.D 12/17/2016 4:30 2.2 Antek#2 1.6 446,129.58 HF ALKYLATION ALKY FEED S2150266.D 12/16/2016 4:30 2.2 Antek#2 1.6 446,129.58 HF ALKYLATION ALKY FEED S2150266.D 12/16/2016 4:30 3.1 Antek#2 1.1 446,129.58 HF ALKYLATION ALKY FEED S2150266.D 12/16/2016 4:30 3.1 Antek#2 1.8 446,129.57 HF ALKYLATION ALKY FEED S2151177.D 12/20/2016 4:30 3.1 Antek#2 1.8 446,129.57 HF ALKYLATION ALKY FEED S2151693.D 12/19/2016 4:30 3.1 Antek#2 1.8 446,129.57 HF ALKYLATION ALKY FEED S2151680.D 12/16/2016 4:30 3.1 Antek#2 1.3 446,129.57 HF ALKYLATION ALKY FEED S2151680.D 12/21/2016 4:30 3.1 Antek#2 1.3 446,129.57 HF ALKYLATION ALKY FEED S2151680.D 12/21/2016 4:30 3.1 Antek#2 1.3 446,129.57 HF ALKYLATION ALKY FEED S2151680.D 12/21/2016 4:30 3.1 Antek#2 1.3 446,129.57 HF ALKYLATION ALKY FEED S2151680.D 12/21/2016 4:30 3.1 Antek#2 1.3 446,129.57 HF ALKYLATION ALKY FEED S2152664.D 12/22/2016 4:30 3.9 Antek#1 1.4 446,129.57 HF ALKYLATION ALKY FEED S21 | | | | | | | | • | | 4.5 |
| HF ALKYLATION ALKY FEED S2147649.D 12/6/2016 4:30 0.4 Antek#1 0.3 446,130.38 HF ALKYLATION ALKY FEED S2148172.D 12/7/2016 4:30 0.7 Antek#2 0.5 446,130.38 HF ALKYLATION ALKY FEED S2148439.D 12/9/2016 4:30 0.7 Antek#2 2.1 446,130.38 HF ALKYLATION ALKY FEED S2148439.D 12/9/2016 4:30 3.0 Antek#2 2.1 446,129.27 HF ALKYLATION ALKY FEED S2148679.D 12/10/2016 4:30 2.9 Antek#2 2.1 446,129.27 HF ALKYLATION ALKY FEED S2148679.D 12/10/2016 4:30 2.9 Antek#2 2.1 446,129.27 HF ALKYLATION ALKY FEED S2148677.D 12/11/2016 4:30 1.8 Antek#2 1.3 446,129.27 HF ALKYLATION ALKY FEED S2149677.D 12/11/2016 4:30 1.8 Antek#2 1.3 446,129.27 HF ALKYLATION ALKY FEED S2149372.D 12/13/2016 4:30 1.6 Antek#1 1.1 446,129.86 HF ALKYLATION ALKY FEED S2149378.D 12/15/2016 4:30 2.1 Antek#1 1.5 446,129.86 HF ALKYLATION ALKY FEED S2150200.D 12/16/2016 4:30 2.1 Antek#1 1.5 446,129.86 HF ALKYLATION ALKY FEED S2150200.D 12/16/2016 4:30 2.1 Antek#1 1.5 446,129.86 HF ALKYLATION ALKY FEED S2150200.D 12/16/2016 4:30 2.1 Antek#1 1.5 446,129.86 HF ALKYLATION ALKY FEED S2150200.D 12/16/2016 4:30 2.2 Antek#2 1.8 446,129.58 HF ALKYLATION ALKY FEED S2150200.D 12/16/2016 4:30 2.2 Antek#2 1.6 446,129.58 HF ALKYLATION ALKY FEED S2150200.D 12/16/2016 4:30 2.2 Antek#2 1.6 446,129.58 HF ALKYLATION ALKY FEED S2150200.D 12/16/2016 4:30 2.2 Antek#2 1.1 446,129.58 HF ALKYLATION ALKY FEED S2150200.D 12/16/2016 4:30 3.1 Antek#1 2.2 446,129.37 HF ALKYLATION ALKY FEED S2150200.D 12/20/2016 4:30 2.8 Antek#2 1.3 446,129.37 HF ALKYLATION ALKY FEED S215103.D 12/20/2016 4:30 2.8 Antek#2 1.3 446,129.37 HF ALKYLATION ALKY FEED S215020.D 12/20/2016 4:30 2.8 Antek#2 1.3 446,129.37 HF ALKYLATION ALKY FEED S215050.D 12/20/2016 4:30 2.8 Antek#2 1.3 446,129.37 HF ALKYLATION ALKY FEED S215080.D 12/20/2016 4:30 2.8 Antek#2 1.3 446,129.37 HF ALKYLATION ALKY FEED S215080.D 12/20/2016 4:30 2.8 Antek#2 1.3 446,129.37 HF ALKYLATION ALKY FEED S215080.D 12/20/2016 4:30 2.9 Antek#2 1.4 446,129.58 HF ALKYLATION ALKY FEED S2150864.D 12/20/2016 4:30 2.9 Antek#2 1.4 446,129.58 HF ALKYLATION ALKY FEED S215 | | 1 | | | | | | | | 6.8 |
| HF ALKYLATION ALKY FEED S2148172.D 12/7/2016 4:30 0.4 Antek#1 0.3 446,130.28 HF ALKYLATION ALKY FEED S2148439.D 12/9/2016 4:30 3.0 Antek#2 0.5 446,130.28 HF ALKYLATION ALKY FEED S2148439.D 12/9/2016 4:30 3.0 Antek#2 2.1 446,129.24 HF ALKYLATION ALKY FEED S2148679.D 12/10/2016 4:30 2.9 Antek#2 2.1 446,129.27 HF ALKYLATION ALKY FEED S2148679.D 12/11/2016 4:30 2.3 Antek#1 1.7 446,129.57 HF ALKYLATION ALKY FEED S2148679.D 12/11/2016 4:30 1.8 Antek#1 1.7 446,129.57 HF ALKYLATION ALKY FEED S2149372.D 12/13/2016 4:30 1.8 Antek#2 1.3 446,129.57 HF ALKYLATION ALKY FEED S2149372.D 12/13/2016 4:30 1.6 Antek#1 1.1 446,129.86 HF ALKYLATION ALKY FEED S2149372.D 12/13/2016 4:30 1.6 Antek#1 1.5 446,129.66 HF ALKYLATION ALKY FEED S215020.D 12/15/2016 4:30 2.1 Antek#1 1.5 446,129.66 HF ALKYLATION ALKY FEED S2150457.D 12/17/2016 4:30 2.2 Antek#2 1.8 446,129.56 HF ALKYLATION ALKY FEED S2150457.D 12/17/2016 4:30 2.2 Antek#2 1.6 446,129.56 HF ALKYLATION ALKY FEED S2150457.D 12/17/2016 4:30 2.2 Antek#2 1.1 446,129.56 HF ALKYLATION ALKY FEED S2150457.D 12/18/2016 4:30 2.2 Antek#2 1.1 446,129.56 HF ALKYLATION ALKY FEED S2150457.D 12/18/2016 4:30 2.2 Antek#2 1.1 446,129.56 HF ALKYLATION ALKY FEED S2150457.D 12/18/2016 4:30 2.2 Antek#2 1.1 446,129.56 HF ALKYLATION ALKY FEED S2150457.D 12/18/2016 4:30 2.6 Antek#2 1.1 446,129.56 HF ALKYLATION ALKY FEED S215195.D 12/20/2016 4:30 2.6 Antek#2 1.8 446,129.47 HF ALKYLATION ALKY FEED S215195.D 12/20/2016 4:30 2.8 Antek#1 2.0 446,129.37 HF ALKYLATION ALKY FEED S2151952.D 12/20/2016 4:30 2.8 Antek#1 1.0 Atky FEED S2151952.D 12/20/2016 4:30 2.8 Antek#2 1.3 446,129.67 HF ALKYLATION ALKY FEED S2151952.D 12/20/2016 4:30 2.1 Antek#2 1.3 446,129.67 HF ALKYLATION ALKY FEED S2152664.D 12/20/2016 4:30 2.1 Antek#2 1.3 446,129.67 HF ALKYLATION ALKY FEED S2152664.D 12/20/2016 4:30 2.0 Antek#2 1.4 446,129.67 HF ALKYLATION ALKY FEED S2152664.D 12/20/2016 4:30 2.0 Antek#2 1.4 446,129.67 HF ALKYLATION ALKY FEED S2152664.D 12/20/2016 4:30 2.0 Antek#2 1.4 446,129.67 HF ALKYLATION ALKY FEED S2152664.D 12/20/2016 4:3 | | | | | | | | , | | 0.6 |
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| HF ALKYLATION ALKY FEED S2150923 D 12/19/2016 4:30 3.1 Antek#1 2.2 446,129.17 HF ALKYLATION ALKY FEED S2151177.D 12/20/2016 4:30 2.6 Antek#2 1.8 446,129.47 HF ALKYLATION ALKY FEED S2151437.D 12/21/2016 4:30 2.8 Antek#1 2.0 446,129.32 HF ALKYLATION ALKY FEED S2151690.D 12/22/2016 4:30 1.8 Antek#2 1.3 446,129.75 HF ALKYLATION ALKY FEED S2151952.D 12/23/2016 4:30 2.1 Antek#2 1.5 446,129.63 HF ALKYLATION ALKY FEED S2152193.D 12/23/2016 4:30 2.0 Antek#2 1.4 446,129.63 HF ALKYLATION ALKY FEED S2152414.D 12/25/2016 4:30 1.9 Antek#2 1.4 446,129.63 HF ALKYLATION ALKY FEED S2152414.D 12/25/2016 4:30 2.2 Antek#2 1.6 446,129.57 HF ALKYLATION ALKY FEED S2152684.D 12/25/2016 4:30 2.2 Antek#2 1.6 446,129.57 HF ALKYLATION ALKY FEED S2152684.D 12/25/2016 4:30 2.2 Antek#2 1.6 446,129.57 HF ALKYLATION ALKY FEED S2152684.D 12/25/2016 4:30 1.9 Antek#2 1.4 446,129.57 HF ALKYLATION ALKY FEED S2152684.D 12/25/2016 4:30 1.9 Antek#2 1.4 446,129.57 HF ALKYLATION ALKY FEED S2152684.D 12/25/2016 4:30 1.9 Antek#2 1.4 446,129.57 HF ALKYLATION ALKY FEED S2152684.D 12/25/2016 4:30 1.9 Antek#2 1.4 446,129.57 HF ALKYLATION ALKY FEED S2152684.D 12/25/2016 4:30 1.9 Antek#2 1.4 446,129.57 HF ALKYLATION ALKY FEED S2152684.D 12/25/2016 4:30 1.9 Antek#2 1.4 446,129.57 HF ALKYLATION ALKY FEED S2152684.D 12/25/2016 4:30 1.9 Antek#2 1.4 446,129.57 HF ALKYLATION ALKY FEED S2152684.D 12/25/2016 4:30 1.9 Antek#2 1.4 446,129.57 HF ALKYLATION ALKY FEED S2152684.D 12/25/2016 4:30 1.9 Antek#2 1.4 446,129.57 HF ALKYLATION ALKY FEED S2152684.D 12/25/2016 4:30 1.9 Antek#2 1.4 446,129.57 HF ALKYLATION ALKY FEED S2152684.D 12/25/2016 4:30 1.9 Antek#2 1.4 446,129.57 HF ALKYLATION ALKY FEED S2152684.D 12/25/2016 4:30 1.9 Antek#2 1.4 446,129.57 HF ALKYLATION ALKY FEED S2152684.D 12/25/2016 4:30 1.9 Antek#2 1.4 446,129.57 HF ALKYLATION ALKY FEED S2152684.D 12/25/2016 4:30 1.9 Antek#2 1.4 446,129.57 HF ALKYLATION ALKY FEED S2152684.D 12/25/2016 4:30 1.9 Antek#2 1.4 446,129.57 HF ALKYLATION ALKY FEED S2152684.D 12/25/2016 4:30 1.9 Antek#2 1.4 446,129.57 HF ALKYLATION ALKY | | | | | | | | | 446,129.906 | 2.4 |
| HF ALKYLATION ALKY FEED S2151477.D 12/20/2016 4:30 2.6 Antek#2 1.8 446,129.42 AF ALKYLATION ALKY FEED S2151437.D 12/21/2016 4:30 2.8 Antek#1 2.0 446,129.32 AF ALKYLATION ALKY FEED S2151690.D 12/22/2016 4:30 1.8 Antek#2 1.3 446,129.32 AF ALKYLATION ALKY FEED S2151952.D 12/23/2016 4:30 2.1 Antek#2 1.5 446,129.52 AF ALKYLATION ALKY FEED S2152193.D 12/24/2016 4:30 2.0 Antek#2 1.4 446,129.52 AF ALKYLATION ALKY FEED S2152414.D 12/25/2016 4:30 1.9 Antek#2 1.4 446,129.52 AF ALKYLATION ALKY FEED S2152664.D 12/25/2016 4:30 2.2 Antek#2 1.6 446,129.51 AF ALKYLATION ALKY FEED S2152664.D 12/25/2016 4:30 2.2 Antek#2 1.6 446,129.51 AF ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.51 AF ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.51 AF ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.51 AF ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.51 AF ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.51 AF ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.51 AF ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.51 AF ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.51 AF ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.51 AF ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.51 AF ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.51 AF ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.51 AF ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.51 AF ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.51 AF ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.51 AF ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 ANTEK#2 1.5 ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 ANTEK#2 1.5 ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 ANTEK#2 1.5 ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 ANTEK | HF ALKYLATION | | | | | | Antek#1 | | 446,129.179 | 5,0 |
| HF ALKYLATION ALKY FEED S2151497.D 12/21/2016 4:30 2.8 Antek#1 2.0 446,129.32 HF ALKYLATION ALKY FEED S2151690.D 12/22/2016 4:30 1.8 Antek#2 1.3 446,129.52 HF ALKYLATION ALKY FEED S2151952.D 12/23/2016 4:30 2.1 Antek#2 1.5 446,129.62 HF ALKYLATION ALKY FEED S2152193.D 12/23/2016 4:30 2.0 Antek#2 1.4 446,129.62 HF ALKYLATION ALKY FEED S2152414.D 12/25/2016 4:30 1.9 Antek#1 1.4 446,129.62 HF ALKYLATION ALKY FEED S2152664.D 12/25/2016 4:30 2.2 Antek#2 1.6 446,129.52 HF ALKYLATION ALKY FEED S2152680.D 12/27/2016 4:30 1.9 Antek#1 1.4 446,129.52 HF ALKYLATION ALKY FEED S2152890.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.52 HF ALKYLATION ALKY FEED S2152890.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.52 HF ALKYLATION ALKY FEED S2152890.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.52 HF ALKYLATION ALKY FEED S2152890.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.52 HF ALKYLATION ALKY FEED S2152890.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.52 HF ALKYLATION ALKY FEED S2152890.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.52 HF ALKYLATION ALKY FEED S2152890.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.52 HF ALKYLATION ALKY FEED S2152890.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.52 HF ALKYLATION ALKY FEED S2152890.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.52 HF ALKYLATION ALKY FEED S2152890.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.52 HF ALKYLATION ALKY FEED S2152890.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.52 HF ALKYLATION ALKY FEED S2152890.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.52 HF ALKYLATION ALKY FEED S2152890.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.52 HF ALKYLATION ALKY FEED S2152890.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.52 HF ALKYLATION ALKY FEED S2152890.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.52 HF ALKYLATION ALKY FEED S2152890.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.52 HF ALKYLATION ALKY FEED S2152890.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.52 HF ALKYLATION ALKY FEED S2152890.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.52 HF ALKYLATION ALKY FEED S2152890.D 12/27/2016 | | | | | | | | | 446,129.420 | 4.1 |
| HF ALKYLATION ALKY FEED S2151690.D 12/22/2016 4:30 1.8 Anlek#2 1.3 446,129.75 HF ALKYLATION ALKY FEED S2151952.D 12/23/2016 4:30 2.1 Anlek#2 1.5 446,129.65 HF ALKYLATION ALKY FEED S2152193.D 12/23/2016 4:30 2.0 Anlek#2 1.4 446,129.65 HF ALKYLATION ALKY FEED S2152414.D 12/25/2016 4:30 1.9 Anlek#1 1.4 446,129.75 HF ALKYLATION ALKY FEED S2152664.D 12/26/2016 4:30 2.2 Anlek#2 1.6 446,129.57 HF ALKYLATION ALKY FEED S2152690.D 12/27/2016 4:30 1.9 Anlek#2 1.4 446,129.70 | | | | | | 2.8 | | | 446,129,326 | 4.5 |
| HF ALKYLATION ALKY FEED \$2151952.D 12/23/2016 4:30 2.1 Antek#2 1.5 446,129.63 HF ALKYLATION ALKY FEED \$2152193.D 12/24/2016 4:30 2.0 Antek#2 1.4 446,129.64 HF ALKYLATION ALKY FEED \$2152414.D 12/25/2016 4:30 1.9 Antek#1 1.4 446,129.73 HF ALKYLATION ALKY FEED \$2152664.D 12/26/2016 4:30 2.2 Antek#2 1.6 446,129.73 HF ALKYLATION ALKY FEED \$2152690.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.73 HF ALKYLATION ALKY FEED \$2152690.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.73 | | | | | | 1.8 | | | 446,129.750 | 2.9 |
| HF ALKYLATION ALKY FEED \$2152193.D 12/24/2016 4:30 2.0 Antek#2 1.4 446,129.60 ALKY LATION ALKY FEED \$2152414.D 12/25/2016 4:30 1.9 Antek#1 1.4 446,129.51 ALKY LATION ALKY FEED \$2152664.D 12/25/2016 4:30 2.2 Antek#2 1.6 446,129.51 HF ALKYLATION ALKY FEED \$2152690.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.70 ALKY LATION ALKY FEED \$2152690.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.70 ALKY LATION ALKY FEED \$2152690.D 12/27/2016 4:30 1.9 Antek#2 1.4 446,129.70 ALKY LATION AL | HF ALKYLATION | ALKY FEED | | | | | Antek#2 | | 446,129.634 | 3.3 |
| HF ALKYLATION ALKY FEED \$2152664.D \$12/26/2016 4:30 2.2 Antek#2 \$1.6 \$46,129.57 HF ALKYLATION ALKY FEED \$2152890.D \$12/27/2016 4:30 \$1.9 Antek#2 \$1.4 \$46,129.57 | HF ALKYLATION | ALKY FEED | | | | | Antek#2 | | 446,129.683 | 3.2 |
| HF ALKYLATION ALKY FEED \$2152664.D \$12/26/2016 \$4:30 \$2.2 Antek#2 \$1.6 \$46,129.57 HF ALKYLATION ALKY FEED \$2152890.D \$12/27/2016 \$4:30 \$1.9 Antek#2 \$1.4 \$46,129.70 HF ALKYLATION ALKY FEED \$2152890.D \$12/27/2016 \$4:30 \$1.9 Antek#2 \$1.4 \$46,129.70 | HF ALKYLATION | | | | | | | 1.4 | 446,129.714 | 3.1 |
| HF ALKYLATION ALKY FEED \$2152890.D 12/27/2016 4:30 , 1,9 Antek#2 1.4 446,129.70 | HF ALKYLATION | ALKY FEED | | | | 2.2 | Antek#2 | | 446,129.571 | 3.6 |
| | HF ALKYLATION | I ALKY FEED | | | | , 1,9 | Antek#2 | | 446,129.705 | 3.1 |
| | HF ALKYLATION | ALKY FEED | S2153155 D | 12/28/2016 | 4:30 | 1.7 | Antek#2 | 1.2 | 446,129.812 | 2.7 |
| HF ALKYLATION ALKY FEED \$2153418.D 12/29/2016 4:30 1,5 Anlek#1 1.1 446,129.90 | | | | | | | | 1.1 | 446,129.901 | 2.4 |
| HF ALKYLATION ALKY FEED S2153681.D 12/30/2016 4:30 1.9 Antek#1 1.3 446,129.72 HF ALKYLATION ALKY FEED S2153925.D 12/31/2016 4:30 1.9 Antek#2 1.4 446,129.70 | | | | | | | | 1.3 | 446,129.727 | 3.0 |

Dreager Tube Sampling AMP Sample Point #5 - Isom Make-up Hydrogen

Note: Monitoring Requirement - Must take at least one sample semi-annually with a minimum of three months between samples.

| Date | Time (hrs) | Result (ppm H2S) | Comments | Sampler |
|------------|------------|---------------------|----------|---------|
| 10/22/2016 | 14:53 | 0 | | TWR |
| 11/7/2016 | 7:04 | 0 | | GKK |
| 12/5/2016 | 8:27 | 0 | | Y18 |

Dreager Tube Sampling AMP Sample Point #6 - PSA Offgas

| Note: Monitoring Requirement - Must take at least one sample semi-annually with a minimum of three months between samples

| Date | Tíme | Result (ppm H2S) | Comments | Sampler |
|-----------|------|---------------------|----------|---------|
| 10/3/2016 | 7:58 | 0 | | GIF |
| 11/7/2016 | 7:41 | 1 0 | • | KQ0 |
| 12/5/2016 | 8:01 | <u> </u> | | KQ0 |

Appendix B Quarterly CGA Results

NORTHERN TIER ENERGY

Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 42-AI-3 | Calender Quarter: | FOURTH |
|-------------|-----------------------------------|-------------------|---------------|
| Unit: | #3 SRU | Analyzer Span: | 0 - 500 PPM |
| Component: | SULFUR DIOXIDE (SO ₂) | Serial Number: | 3.245249.3 |
| Date: | Monday, November 07, 2016 | Technician: | JACOB PAZUREK |
| Start Time: | 13:02 | End Time: | 14:20 |

Cylinder Gas Pressure Values

| Cylinder Pressure (Start) | | | | | |
|---------------------------|------|--|--|--|--|
| Low Range | 1710 | | | | |
| High Range | 1920 | | | | |

| Cylinder Pressure (End) | | | | |
|-------------------------|------|--|--|--|
| Low Range | 1700 | | | |
| High Range | 1910 | | | |

| | Cylinder Gas-Information | |
|---------------------------------|--------------------------|----------------------|
| | Low Calibration Gas | High Calibration Gas |
| Cylinder Certification Number: | 175894 | CC352324 |
| Cylinder Certification Date: | 3/3/2011 | 3/31/2014 |
| Cylinder Expiration Date: | 3/3/2019 | 3/31/2022 |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One |
| Concentration (ppm or % Ca): | 128.5 | 280.1 |

| Calibration Gas Audit Results | | | | | |
|--------------------------------|-------------|--------------|--|--|--|
| | Low Cal Gas | High Cal Gas | | | |
| Range of Allowance (±15%) Low | 109.28 | 238!09 | | | |
| Range of Allowance (±15%) High | 14778 | 322.12 | | | |
| Test Run #1 | 126.93 | 277.44 | | | |
| Test Run #2 | 127.21 | 277.24 | | | |
| Test Run #3 | 127.40 | 277.42 | | | |
| Average Result (Cm) | 127.13 | 20/7/350 | | | |
| Accuracy (%) | -fl.08 | -0,93 | | | |
| Allowable Accuracy Error (%) | ± 15% | ± 15% | | | |
| Test Results | | • | | | |

TEST WAS SUCCESSFUL!

NORTHERN TIER ENERGY

Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 42-Al-4 | Calender Quarter: | FOURTH |
|-------------|---------------------------|-------------------|---------------|
| | #3 SRU | Analyzer Span: | 0 - 25% |
| Component: | OXYGEN (O2) | Serial Number: | 3.245244.3 |
| Date: | Monday, November 07, 2016 | Technician: | JACOB PAZUREK |
| Start Time: | 13:02 | End Time: | 14:20 |

Cylinder Gas Pressure Values

| Cylinder Pressure (Start) | | |
|---------------------------|------|--|
| Low Range | 1910 | |
| High Range | 1710 | |

| Cylinder Pressure (End) | | | | |
|-------------------------|------|--|--|--|
| Low Range | 1900 | | | |
| High Range | 1700 | | | |

| Cylinder Gas Information | | | |
|---------------------------------|---------------------|----------------------|--|
| | Low Calibration Gas | High Calibration Gas | |
| Cylinder Certification Number: | CC247661 | CC335268 | |
| Cylinder Certification Date: | 3/27/2014 | 2/11/2011 | |
| Cylinder Expiration Date: | 3/27/2022 | 2/11/2019 | |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One | |
| Concentration (ppm or % Ca): | 4.967 | 9.521 | |

| Calibration Gas Audit Results | | |
|--------------------------------|-------------|--------------|
| | Low Cal Gas | High Cal Gas |
| Range of Allowance (±15%) Low | 4,22 | 8109 |
| Range of Allowance (±15%) High | 5.74 | 1.: 10.95 |
| Test Run #1 | 5.11 | 9.67 |
| Test Run #2 | 5.10 | 9.67 |
| Test Run #3 | 5.10 | 9.67 |
| Average Result (Cm) | 5.10 | 9.67 |
| Accuracy (%) | 2.72 | 1,56 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | • |

TEST WAS SUCCESSFUL!



Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 2-AI-103 | Calender Quarter: | FOURTH |
|-------------|---------------------------|-------------------|------------|
| Unit: | #2 CRUDE | Analyzer Span: | 0 - 10% |
| Component: | OXYGEN (O ₂) | Serial Number: | 3.246580.2 |
| Date: | Monday, November 07, 2016 | Technician: | BRYAN WINN |
| Start Time: | 13:06 | End Time: | 14:24 |

Cylinder Gas Pressure Values

| Cylinder Pressure (Start) | | |
|---------------------------|------|---|
| Low Range | 1700 | ٦ |
| High Range | 1600 | ╗ |

| Cylinder Pressure (End) | | |
|-------------------------|------|--|
| Low Range | 1700 | |
| High Range | 1595 | |

| Cylinder Gas Information | | | |
|---------------------------------|---------------------|----------------------|--|
| | Low Calibration Gas | High Calibration Gas | |
| Cylinder Certification Number: | CC171855 | CC174008 | |
| Cylinder Certification Date: | 5/6/2010 | 2/17/2011 | |
| Cylinder Expiration Date: | 5/6/2018 | 2/17/2019 | |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One | |
| Concentration (ppm or % Ca): | 5.162 | 9.998 | |

| Calibration Gas Audit Results | | |
|--------------------------------|--------------------|-----------------|
| | Low Cal Gas | High Cal Gas |
| Range of Allowance (±15%) Low | 4:39 | 8:50/G |
| Range of Allowance (±15%) High | | 第5 |
| Test Run #1 | 5.11 | 9.93 |
| Test Run #2 | 5.11 | 9.93 |
| Test Run #3 | 5.10 | 9.92 |
| Average Result (Cm) | 44 / A 25 (11 / 4) | 9!93 |
| Accuracy (%) | 55 0 35 07 A S | C-95 (C-0.7.17) |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | |

TEST WAS SUCCESSFUL!



Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 2-AI-104 | Calender Quarter: | FOURTH |
|-------------|---------------------------------------|-------------------|-------------|
| Unit: | #2 CRUDE | Analyzer Span: | 0 - 100 PPM |
| Component: | OXIDES OF NITROGEN (NO _x) | Serial Number: | 3.246579.2 |
| Date: | Monday, November 07, 2016 | Technician: | BRYAN WINN |
| Start Time: | 13:06 | End Time: | 14:24 |

Cylinder Gas Pressure Values

| Cylind | er Pressure (Start) |
|------------|---------------------|
| Low Range | 1900 |
| High Range | 800 |

| Cylinder Pressure (End) | |
|-------------------------|------|
| Low Range | 1900 |
| High Range 795 | |

| Cylinder Gas Information | | |
|---------------------------------|---------------------|----------------------|
| | Low Calibration Gas | High Calibration Gas |
| Cylinder Certification Number: | CC402777 | CC67661 |
| Cylinder Certification Date: | 7/1/2014 | 7/31/2013 |
| Cylinder Expiration Date: | 7/1/2017 | 7/31/2021 |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One |
| Concentration (ppm or % Ca): | 24.9 | 54.3 |

| | Low Cal Gas | High Cal Gas |
|--------------------------------|-------------|--------------|
| Range of Allowance (±15%) Low | 21.12 | 46.12 |
| Range of Allowance (±15%) High | 28.58 | G240 |
| Test Run #1 | 24.39 | 55.34 |
| Test Run #2 | 24.32 | 55.42 |
| Test Run #3 | 24.38 | 55.39 |
| Average Result (Cm) | 24,36 | 55.38 |
| Accuracy (%) | 4.86 | 2,07 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | |

TEST WAS SUCCESSFUL!

NORTHERN TIER ENERGY

Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 31-Al-1A | Calender Quarter: | FOURTH |
|-------------|----------------------------|-------------------|------------|
| Unit: | #2 SRU | Analyzer Span: | 0 - 25% |
| Component: | OXYGEN (O ₂) | Serial Number: | C149549 |
| Date: | Tuesday, November 08, 2016 | Technician: | BRYAN WINN |
| Start Time: | 14:16 | End Time: | 14:56 |

Cylinder Gas Pressure Values

| Cylinder Pressure (Start) | | |
|---------------------------|------|--|
| Low Range | 1750 | |
| High Range | 1230 | |

| Cylinder Pressure (End) | |
|-------------------------|------|
| Low Range | 1740 |
| High Range | 1220 |

| Cylinder Gas Information | | |
|---------------------------------|---------------------|----------------------|
| | Low Calibration Gas | High Calibration Gas |
| Cylinder Certification Number: | CC37936 | CC175979 |
| Cylinder Certification Date: | 7/5/2011 | 7/7/2011 |
| Cylinder Expiration Date: | 7/5/2019 | 7/7/2019 |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One |
| Concentration (ppm or % Ca): | 5,122 | 10.070 |

| Calibration Gas Audit Results | | |
|--------------------------------|---|--------------|
| | Low Cal Gas | High Cal Gas |
| Range of Allowance (±15%) Low | 435 | 8156 |
| Range of Allowance (±15%) High | 4.74 5.89 · A | |
| Test Run #1 | 5.11 | 10.11 |
| Test Run #2 | 5.10 | 10.10 |
| Test Run #3 | 5.10 | 10.10 |
| Average Result (Cm) | 510° × 10° 510° × | 10.10 |
| Accuracy (%) | -0.36 | . 0.38 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | |

TEST WAS SUCCESSFUL!



Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 31-Al-1B | Calender Quarter: | FOURTH |
|-------------|----------------------------|-------------------|-------------|
| Unit: | #2 SRU | Analyzer Span: | 0 - 500 PPM |
| Component: | SULFUR DIOXIDE (SO₂) | Serial Number: | 6981 |
| Date: | Tuesday, November 08, 2016 | Technician: | BRYAN WINN |
| Start Time: | 14:16 | End Time: | 14:14 |

Cylinder Gas Pressure Values

| Cylinder Pressure (Start) | |
|---------------------------|------|
| Low Range | 1750 |
| High Range | 1230 |

| Cylinder Pressure (End) | |
|-------------------------|------|
| Low Range | 1740 |
| High Range | 1220 |

| Cylinder Gas Information | | |
|---------------------------------|---------------------|----------------------|
| | Low Calibration Gas | High Calibration Gas |
| Cylinder Certification Number: | CC37936 | CC175979 |
| Cylinder Certification Date: | 7/5/2011 | 7/7/2011 |
| Cylinder Expiration Date: | 7/5/2019 | 7/7/2019 |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One |
| Concentration (ppm or % Ca): | 127.000 | 279.500 |

| Calibration Gas Audit Results | | |
|--------------------------------|-------------|--------------|
| | Low Cal Gas | High Cal Gas |
| Range of Allowance (±15%) Low | 107,95 | 237/58 |
| Range of Allowance (±15%) High | 146.05 | 321.49 |
| Test Run #1 | 129.88 | 283.73 |
| Test Run #2 | 130.52 | 283.98 |
| Test Run #3 | 130.72 | 283.22 |
| Average Result (Cm) | 130.37 | 288.64 |
| Accuracy (%) | 2.66 | 1,43 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | 18 |

TEST WAS SUCCESSFUL!

NORTHERN TIER ENERGY

Saint Paul Park Refinery Cal Gas Audit Saint Paul Park, MN

| Tag #: | 32-AI-250 | Calender Quarter: | FOURTH |
|-------------|----------------------------|-------------------|------------|
| Unit: | HDH | Analyzer Span: | 0 - 10% |
| Component: | OXYGEN (O ₂) | Serial Number: | 3.346624.7 |
| Date: | Tuesday, November 08, 2016 | Technician: | BRYAN WINN |
| Start Time: | 12:42 | End Time: | 13:59 |

Cylinder Gas Pressure Values

| Cylinder Pressure (Start) | | | |
|---------------------------|------|--|--|
| Low Range | 1750 | | |
| High Range | 1700 | | |

| Cylinder Pressure (End) | | | |
|-------------------------|------|--|--|
| Low Range | 1730 | | |
| High Range | 1700 | | |

| The second second second second second second second second second second second second second second second se | market of the second | |
|---|----------------------|----------------------|
| | Low Calibration Gas | High Calibration Gas |
| Cylinder Certification Number: | CC327623 | CC337712 |
| Cylinder Certification Date: | 2/4/2011 | 2/3/2011 |
| Cylinder Expiration Date: | 2/4/2019 | 2/3/2019 |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One |
| Concentration (ppm or % Ca): | 5.023 | 10.000 |

| | Low Cal Gas | High Cal Gas |
|--------------------------------|-------------|--------------|
| Range of Allowance (±15%) Low | 4.27 | 8,50 |
| Range of Allowance (±15%) High | 5.78 | 11450 |
| Test Run #1 | 4.98 | 9.99 |
| Test Run #2 | 4.99 | 9.99 |
| Test Run #3 | 4.99 | 9.99 |
| Average Result (Cm) | 4.99 | 9.99 |
| Accuracy (%) | -0.72 | -0.10 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | |

TEST WAS SUCCESSFUL!



Saint Paul Park Refinery Cal Gas Audit Saint Paul Park, MN

| Tag #: | 32-AI-251 | Calender Quarter: | FOURTH |
|-------------|---------------------------------------|-------------------|-------------|
| Unit: | HDH | Analyzer Span: | 0 - 100 PPM |
| Component: | OXIDES OF NITROGEN (NO _X) | Serial Number: | 3.346654.7 |
| Date: | Tuesday, November 08, 2016 | Technician: | BRYAN WINN |
| Start Time: | 12:42 | End Time: | 13:59 |

Cylinder Gas Pressure Values

| Cylind | er Pressure (Stårt) |
|------------|---------------------|
| Low Range | 1880 |
| High Range | 1600 |

| Cylinde | er Pressure (End) |
|------------|-------------------|
| Low Range | 1820 |
| High Range | 1600 |

| Carry The Control of the Control of | | |
|---|---------------------|----------------------|
| | Low Calibration Gas | High Calibration Gas |
| Cylinder Certification Number: | CC48525 | CC400311 |
| Cylinder Certification Date: | 3/20/2015 | 1/31/2013 |
| Cylinder Expiration Date: | 3/20/2018 | 1/31/2021 |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One |
| Concentration (ppm or % Ca): | 25.00 | 57.71 |

| | Low Cal Gas | High Cal Gas |
|--------------------------------|-------------|--------------|
| Range of Allowance (±15%) Low | 21.25 | 49!05 |
| Range of Allowance (±15%) High | 28.75 | 66,37. |
| Test Run #1 | 25.17 | 59.26 |
| Test Run #2 | 25.20 | 58.52 |
| Test Run #3 | 25.14 | 58.36 |
| Average Result (Cm) | 25.17 | 58.71 |
| Accuracy (%) | 0.68 | 1.74 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | |

TEST WAS SUCCESSFUL!

NORTHERN TIER EMERGY

Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 16-Al-13 | Calender Quarter: | FOURTH |
|-------------|----------------------------|-------------------|---------------|
| Unit: | Boiler #7 | Analyzer Span: | 0 - 25% |
| Component: | OXYGEN (O₂) | Serial Number: | 3.347965.0 |
| Date: | Tuesday, November 08, 2016 | Technician: | JACOB PAZUREK |
| Start Time: | 12:44 | End Time: | 14:01 |

Cylinder Gas Pressure Values

| Cylind | er Pressure (Stärt) |
|------------|---------------------|
| Low Range | 1710 |
| High Range | 1580 |

| Cylinder Pressure (End) | | |
|-------------------------|------|--|
| Low Range | 1700 | |
| High Range | 1570 | |

| Cylinder Gas Information | | |
|---------------------------------|---------------------|----------------------|
| | Low Calibration Gas | High Calibration Gas |
| Cylinder Certification Number: | CC151353 | SG9152543BAL |
| Cylinder Certification Date: | 8/9/2011 | 8/9/2011 |
| Cylinder Expiration Date: | 8/9/2019 | 8/9/2019 |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One |
| Concentration (ppm or % Ca): | 5.038 | 10.110 |

| Calibration Gas Audit Results | | |
|--------------------------------|-------------|--------------|
| | Low Cal Gas | High Cal Gas |
| Range of Allowance (±15%) Low | 4.28 | 8!59 |
| Range of Allowance (±15%) High | 5.79 | 11.68 |
| Test Run #1 | 4.97 | 10.06 |
| Test Run #2 | 4.97 | 10.06 |
| Test Run #3 | 4.97 | 10.06 |
| Average Result (Cm) | 4.97 | 10.06 |
| Accuracy (%) | -1.38 | -0.52 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | |

TEST WAS SUCCESSFUL!

NORTHERN TIER ENERGY

Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 16-Al-14 | Calender Quarter: | FOURTH |
|-----------------|---------------------------------------|-------------------|---------------|
| Tag #: Unit: | Boiler #7 | Analyzer Span: | 0 - 500 PPM |
| Component: | OXIDES OF NITROGEN (NO _X) | Serial Number: | 3.347963.0 |
| Date: | Tuesday, November 08, 2016 | Technician: | JACOB PAZUREK |
| Start Time: | 12:44 | End Time: | 14:01 |

Cylinder Gas Pressure Values

| Cylinder Pressure (Start) | | |
|---------------------------|------|--|
| Low Range | 1510 | |
| High Range | 1700 | |

| Cylinde | er Pressure (End) |
|------------|-------------------|
| Low Range | 1500 |
| High Range | 1690 |

| Cylinder Gas Information | | |
|---------------------------------|---------------------|----------------------|
| | Low Calibration Gas | High Calibration Gas |
| Cylinder Certification Number: | CC158095 | CC403016 |
| Cylinder Certification Date: | 8/3/2011 | 7/9/2013 |
| Cylinder Expiration Date: | 8/3/2019 | 7/9/2021 |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One |
| Concentration (ppm or % Ca): | 129.2 | 277.7 |

| Calibration Gas Audit Results Low Cal Gas High Cal Gas | | |
|---|---------|---------|
| Range of Allowance (±15%) Low | 109!82 | 236.05 |
| Range of Allowance (±15%) High | 1/48.58 | 319.33 |
| Test Run #1 | 128.18 | 275.32 |
| Test Run #2 | 128.22 | 274.93 |
| Test Run #3 | 128.15 | 274.93 |
| Average Result (Cm) | 128.19 | 27/5.06 |
| Accuracy (%) | -0.79 | -0.95 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | |

TEST WAS SUCCESSFUL!

NORTHERN TIER ENERGY

Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: Unit: | 16-Al-15 | Calender Quarter: | FOURTH |
|-----------------|----------------------------|-------------------|---------------|
| Unit: | Boiler #7 | Analyzer Span: | 0 - 1000 PPM |
| Component: | CARBON MONOXIDE (CO) | Serial Number: | 3.347963.0 |
| Date: | Tuesday, November 08, 2016 | Technician: | JACOB PAZUREK |
| Start Time: | 12:44 | End Time: | 14:01 |

Cylinder Gas Pressure Values

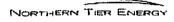
| Cyllinder/Pressure (Start) | | |
|----------------------------|------|--|
| Low Range | 1710 | |
| High Range | 1580 | |

| Cylinder Pressure (End) | |
|-------------------------|------|
| Low Range | 1700 |
| High Range | 1570 |

| Gylinder/Gas/Information | | |
|---------------------------------|---------------------|----------------------|
| | Low Calibration Gas | High Calibration Gas |
| Cylinder Certification Number: | CC151353 | SG9152543BAL |
| Cylinder Certification Date: | 8/9/2011 | 8/9/2011 |
| Cylinder Expiration Date: | 8/9/2019 | 8/9/2019 |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One |
| Concentration (ppm or % Ca): | 259.00 | 573.90 |

| | Low Cal Gas | High Cal Gas |
|--------------------------------|-------------|--------------|
| Range of Allowance (±15%) Low | 220115 | 487/82 |
| Range of Allowance (±15%) High | 297/85 | 659,99 |
| Test Run #1 | 255.20 | 559.18 |
| Test Run #2 | 255.37 | 559.79 |
| Test Run #3 | 255.58 | 560.32 |
| Average Result (Cm) | 255.38 | 5595/6 |
| Accuracy (%) | ન40 | -246 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | |

TEST WAS SUCCESSFUL!



Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 16-Al-18 | Calender Quarter: | FOURTH |
|-------------|----------------------------|-------------------|---------------|
| Unit: | Boiler #8 | Analyzer Span: | 0 - 25% |
| Component: | OXYGEN (O ₂) | Serial Number: | 3.347966.0 |
| Date: | Tuesday, November 08, 2016 | Technician: | JACOB PAZUREK |
| Start Time: | 12:44 | End Time: | 14:01 |

Cylinder Gas Pressure Values

| Cylinder Pressure (Start) | | |
|---------------------------|------|--|
| Low Range | 1710 | |
| High Range | 1580 | |

| Cylinder Pressure (End) | | |
|-------------------------|------|--|
| Low Range | 1700 | |
| High Range | 1570 | |

| Cylinder Gas Information | | | |
|---------------------------------|---------------------|----------------------|--|
| | Low Calibration Gas | High Calibration Gas | |
| Cylinder Certification Number: | CC151353 | SG9152543BAL | |
| Cylinder Certification Date: | 8/9/2011 | 8/9/2011 | |
| Cylinder Expiration Date: | 8/9/2019 | 8/9/2019 | |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One | |
| Concentration (ppm or % Ca): | 5.038 | 10.110 | |

| Calibration Gas Audit Results | | |
|--------------------------------|-------------|------------------------|
| | Low Cal Gas | High Cal Gas |
| Range of Allowance (±15%) Low | 4-28 | |
| Range of Allowance (±15%) High | 5797 | EPPAS 111:63 3 1 1 1 1 |
| Test Run #1 | 4.97 | 10.07 |
| Test Run #2 | 4.98 | 10.07 |
| Test Run #3 | 4.98 | 10.07 |
| Average Result (Cm) | 498 Maria | 1. 10:07 · · · |
| Accuracy (%) | 25 | MF4 7040 3 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | |

TEST WAS SUCCESSFUL!

NORTHERN TIER ENERGY

Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 16-AI-19 | Calender Quarter: | FOURTH |
|-------------|---------------------------------------|-------------------|---------------|
| Unit: | Boiler #8 | Analyzer Span: | 0 - 500 PPM |
| Component: | OXIDES OF NITROGEN (NO _X) | Serial Number: | 3.347964.0 |
| Date: | Tuesday, November 08, 2016 | Technician: | JACOB PAZUREK |
| Start Time: | 12:44 | End Time: | 14:01 |

Cylinder Gas Pressure Values

| Cylinder Pressure (Start) | | |
|---------------------------|------|--|
| Low Range | 1510 | |
| High Range | 1700 | |

| Cylinder Pressure (End) | | |
|-------------------------|------|--|
| Low Range | 1500 | |
| High Range | 1690 | |

| Cylinder Gas Information | | | |
|---------------------------------|---------------------|----------------------|--|
| | Low Calibration Gas | High Calibration Gas | |
| Cylinder Certification Number: | CC158095 | CC403016 | |
| Cylinder Certification Date: | 8/3/2011 | 7/9/2013 | |
| Cylinder Expiration Date: | 8/3/2019 | 7/9/2021 | |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One | |
| Concentration (ppm or % Ca): | 129.2 | 277.7 | |

| Calibration Gas Audit Results | | |
|--------------------------------|-------------|--------------|
| | Low Cal Gas | High Cal Gas |
| Range of Allowance (±15%) Low | 109.82 | 236.05 |
| Range of Allowance (±15%) High | 148.58 | 319:36 |
| Test Run #1 | 124.33 | 271.31 |
| Test Run #2 | 123.87 | 270.70 |
| Test Run #3 | 124.28 | 270.71 |
| Average Result (Cm) | 12416 | 270!91 |
| Accuracy (%) | 3.90 | -2.45 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | |

TEST WAS SUCCESSFUL!

NORTHERN TIER ENERGY

Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 16-Al-20 | Calender Quarter: | FOURTH |
|-------------|----------------------------|-------------------|---------------|
| Unit: | Boiler #8 | Analyzer Span: | 0 - 1000 PPM |
| Component: | CARBON MONOXIDE (CO) | Serial Number: | 3.347964.0 |
| Date: | Tuesday, November 08, 2016 | Technician: | JACOB PAZUREK |
| Start Time: | 12:44 | End Time: | 14:01 |

Cylinder Gas Pressure Values

| Cylinder P | ressure (Start) |
|------------|-----------------|
| Low Range | 1710 |
| High Range | 1580 |

| Cylinder Pressure (End) | | |
|-------------------------|------|--|
| Low Range | 1700 | |
| High Range | 1570 | |

| Cylinder Gastinformation | | |
|---------------------------------|---------------------|----------------------|
| | Low Calibration Gas | High Calibration Gas |
| Cylinder Certification Number: | CC151353 | SG9152543BAL |
| Cylinder Certification Date: | 8/9/2011 | 8/9/2011 |
| Cylinder Expiration Date: | 8/9/2019 | 8/9/2019 |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One |
| Concentration (ppm or % Ca): | 259.00 | 573.90 |

| | Low Cal Gas | High Cal Gas |
|--------------------------------|-------------|--------------|
| Range of Allowance (±15%) Low | 220.115 | 487.82 |
| Range of Allowance (±15%) High | 297,85 | 659,99 |
| Test Run #1 | 257.69 | 564.76 |
| Test Run #2 | 257.63 | 564.97 |
| Test Run #3 | 257.79 | 565.12 |
| Average Result (Cm) | 257.70 | 564.95 |
| Accuracy (%) | <0.50 | ની 56 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | |

TEST WAS SUCCESSFUL!

NORTHERN TIER ENERGY

Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 14-Al-106 | Calender Quarter: | FOURTH |
|-------------|------------------------------|-------------------|-------------|
| Unit: | WASTE WATER | Analyzer Span: | 0 - 300 PPM |
| Component: | HYDROGEN SULFIDE (H₂S) | Serial Number: | H004440001 |
| Date: | Wednesday, November 09, 2016 | Technician: | BRYAN WINN |
| Start Time: | 12:51 | End Time: | 13:38 |

Cylinder Gas Pressure Values

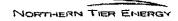
| Cylinder Rressure (Start) | | |
|---------------------------|------|--|
| Low Range | 1940 | |
| High Range | 1990 | |

| Cylinder Pressure (End) | | |
|-------------------------|------|--|
| Low Range | 1930 | |
| High Range | 1980 | |

| Cylinder Gastliformation | | | |
|---------------------------------|---------------------|----------------------|--|
| | Low Calibration Gas | High Calibration Gas | |
| Cylinder Certification Number: | CC330083 | CC159459 | |
| Cylinder Certification Date: | 2/11/2015 | 2/16/2015 | |
| Cylinder Expiration Date: | 2/11/2018 | 2/16/2018 | |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One | |
| Concentration (ppm or % Ca): | 75.3 | 167.9 | |

| | Low Cal Gas | High Cal Gas |
|--------------------------------|-------------|--------------|
| Range of Allowance (±15%) Low | 64.01 | V1272 |
| Range of Allowance (±15%) High | 86.60 | 193,09 |
| Test Run #1 | 75.33 | 177.10 |
| Test Run #2 | 74.11 | 177.80 |
| Test Run #3 | 73.76 | 178.30 |
| Average Result (Cm) | 7440 | 1777.78 |
| Accuracy (%) | A20 | 5.86 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | |

TEST WAS SUCCESSFUL!



Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 7-AI-205 | Calender Quarter: | FOURTH |
|-------------|--|-------------------|---------------|
| Unit: | VRU | Analyzer Span: | 0 - 5% |
| Component: | PROPANE (C ₃ H ₈) | Serial Number: | ERFH-0934 |
| Date: | Wednesday, November 09, 2016 | Technician: | JACOB PAZUREK |
| Start Time: | 15:39 | End Time: | 16:06 |

Cylinder Gas Pressure Values

| Gylfinder (| ressure (Start) |
|-------------|-----------------|
| Low Range | 1400 |
| High Range | 1300 |

| E Cylind | er(Pressure (End) |
|-----------------|-------------------|
| Low Range | 1395 |
| High Range | 1295 |

| Cylinder Gas Information | | | |
|---------------------------------|---------------------|----------------------|--|
| | Low Calibration Gas | High Calibration Gas | |
| Cylinder Certification Number: | SG9160857BAL | LCCOSA10333 | |
| Cylinder Certification Date: | 3/24/2014 | 6/22/2011 | |
| Cylinder Expiration Date: | 3/24/2022 | 6/22/2019 | |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One | |
| Concentration (ppm or % Ca): | 1.36 | 2.63 | |

| | Low Cal Gas | High Cal Gas |
|--------------------------------|-------------|--------------|
| Range of Allowance (±15%) Low | 1.16 | 2.23 |
| Range of Allowance (±15%) High | 1.57 | 3.02 |
| Test Run #1 | 1.55 | 3.00 |
| Test Run #2 | 1.55 | 3.00 |
| Test Run #3 | 1.55 | 3.00 |
| Average Result (Cm) | 1,55 | 3.00 |
| Accuracy (%) | 13,68 | 14.09 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | |

TEST WAS SUCCESSFUL!



Saint Paul Park Refinery Cal Gas Audit Saint Paul Park, MN

| Tag #: | 08-AI-0030A | Calender Quarter: | FOURTH |
|-------------|-----------------------------|-------------------|------------|
| Unit: | 8-B-1 | Analyzer Span: | 0 - 15% |
| Component: | OXYGEN (O ₂) | Serial Number: | 3.359909.2 |
| Date: | Thursday, November 10, 2016 | Technician: | BRYAN WINN |
| Start Time: | 13:17 | End Time: | 14:35 |

Cylinder Gas Pressure Values

| Cylir | der Pressure (Start) | |
|------------|----------------------|--|
| Low Range | 1700 | |
| High Range | 1610 | |

| Cylinder Pressure (End) | | |
|-------------------------|------|--|
| Low Range 1700 | | |
| High Range | 1600 | |

| Cylinder Gas Information | | | |
|---------------------------------|---------------------|----------------------|--|
| | Low Calibration Gas | High Calibration Gas | |
| Cylinder Certification Number: | SG9169569BAL | EB0020125 | |
| Cylinder Certification Date: | 7/1/2013 | 10/7/2011 | |
| Cylinder Expiration Date: | 7/1/2021 | 10/7/2019 | |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One | |
| Concentration (ppm or % Ca): | 5.002 | 10.010 | |

| | Low Cal Gas | High Cal Gas |
|--------------------------------|-------------|--------------|
| Range of Allowance (±15%) Low | 4.25 | 8.51 |
| Range of Allowance (±15%) High | 5.75 | 11.51 |
| Test Run #1 | 5.00 | 10.00 |
| Test Run #2 | 4.99 | 10.00 |
| Test Run #3 | 4.99 | 10.00 |
| Average Result (Cm) | 4.99 | 10.00 |
| Accuracy (%) | -0.17 | -0.10 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | |

TEST WAS SUCCESSFUL!

NORTHERN TIER ENERGY

Saint Paul Park Refinery Cal Gas Audit Saint Paul Park, MN

| Tag #: | 08-AI-0030B | Calender Quarter: | FOURTH |
|-------------|---------------------------------------|-------------------|-------------|
| Unit: | 8-B-1 | Analyzer Span: | 0 - 100 PPM |
| Component: | OXIDES OF NITROGEN (NO _x) | Serial Number: | 3.359841-2 |
| Date: | Thursday, November 10, 2016 | Technician: | BRYAN WINN |
| Start Time: | 13:17 | End Time: | 14:35 |

Cylinder Gas Pressure Values

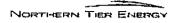
| Cyling | ler Pressure (Start) |
|------------|----------------------|
| Low Range | 2100 |
| High Range | 1600 |

| Cylind | er Pressure (End) |
|------------|-------------------|
| Low Range | 2100 |
| High Range | 1600 |

| Control of the Contro | Tracket, | |
|--|---------------------|----------------------|
| | Low Calibration Gas | High Calibration Gas |
| Cylinder Certification Number: | CC323462 | XC024745B |
| Cylinder Certification Date: | 3/28/2016 | 2/21/2011 |
| Cylinder Expiration Date: | 3/28/2019 | 2/21/2019 |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One |
| Concentration (ppm or % Ca): | 25.34 | 54.45 |

| Calibration Gas Audit Results | | |
|--------------------------------|-------------|---------------|
| | Low Cal Gas | High Cal Gas |
| Range of Allowance (±15%) Low | 24.54 | 46.28 |
| Range of Allowance (±15%) High | 29.14 | |
| Test Run #1 | 25.66 | 54.43 |
| Test Run #2 | 25.62 | 54.82 |
| Test Run #3 | 25.79 | 55.03 |
| Average Result (Cm) | 25.69 | <i>5</i> 4.76 |
| Accuracy (%) | 1.33 | 0.57 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | |

TEST WAS SUCCESSFUL!



Saint Paul Park Refinery Opacity Audit

Saint Paul Park, MN

| Tag #: | 8-AI-3A | Filter Certification Date: | May 18, 2016 |
|-------------|----------------------------|---|--------------------------|
| Unit: | FCC | Note: Cert. date must be no later than 6 months of test | |
| Date: | Tuesday, November 15, 2016 | Instrument Serial No: | 440-A-6000044023-B21/423 |
| Technician: | BRYAN WINN | Monitor Pathlength | 60.125" |
| Start Time: | 12:50 | Outlet Pathlength: | 60.125" |
| End Time: | 14:10 | Pathlength Corrected: | No |

Calibrated Neutral Density Filter Values

| Actual Optical Density Filter Values | | | |
|--------------------------------------|-------|--|--|
| Low Range | 10.75 | | |
| Mid Range | 19.61 | | |
| High Range | 34.49 | | |

| *****Adjusted Optical Density Filter Values | | | |
|---|-----|--|--|
| Low Range | N/A | | |
| Mid Range | N/A | | |
| High Range | N/A | | |

| Opacity Audit Readings | | | | | | |
|------------------------|-------|--------------------|--------------------|----------------------------|-------------------------|---------------|
| Run Number | Range | Calibration Filter | Instrument Reading | Arithmetic Values (Ca - Cn | | |
| | rango | (%Ca) | (%Cm) | Low | Mid | High |
| 1-1 | Low | 10.75 | 11.533 | -0.78 | > < | \searrow |
| 1-2 | Mid | 19.61 | 20.131 | | -0.52 | |
| 1-3 | High | 34.49 | 34.948 | | > < | -0.43 |
| 2-1 | Low | 10.75 | 11.534 | -0.78 | > | |
| 2-2 | Mid | 19.61 | 20.128 | | -0.52 | |
| 2-3 | High | 34.49 | 35.243 | | > < | -0.76 |
| 3-1 | Low | 10.75 | 11.534 | <0.78 | $\overline{\mathbf{x}}$ | |
| 3-2 | Mid | 19.61 | 20.331 | | -0.72 | |
| 3-3 | High | 34.49 | 35.329 | | > < | -0.83 |
| 4-1 | Low | 10.75 | 11.534 | -0.78 | $\overline{\mathbb{Z}}$ | |
| 4-2 | Mid | 19.61 | 20.039 | | -0.43 | |
| 4-3 | High | 34.49 | 34.932 | | > < | -0,4/3 |
| 5-1 | Low | 10.75 | 11.535 | -0.7/9 | > | |
| 5-2 | Mid | 19.61 | 20.246 | | -0.64 | |
| 5-3 | High | 34.49 | 35.037 | | > < | c 0.55 |

| Opadiy Audit Results | | | | |
|---------------------------------|-------|--------------|--------|--|
| | Low | Mid | High | |
| Arithmetic Mean | -0.78 | <0.457 | -0.6f) | |
| Standard Deviation | 0.00 | Q .91 | 0.13 | |
| Confidence Coefficient | 0.00 | 0.94 | 0.22 | |
| Calibration Error (%) | 0.78 | 0.71 | 0.33 | |
| Allowable Calibration Error (%) | ≤ 3% | ≤ 3% | ≤ 3% | |
| Test Results | | | | |

TEST WAS SUCCESSFUL!

NOTE: Test Method and Procedures can be referenced from Saint Paul Park Refining Company (SPPRC) Title V Permit and QA/QC Program per Minnesota State Rule 7017 Subpart (1).



Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 11-Al-1 | Calender Quarter: | FOURTH |
|-------------|---------------------------|-------------------|---------------|
| Unit: | REFORMER | Analyzer Span: | 0 - 300 PPM |
| Component: | HYDROGEN SULFIDE (H₂S) | Serial Number: | G0024 |
| Date: | Monday, December 05, 2016 | Technician: | JACOB PAZUREK |
| Start Time: | 13:27 | End Time: | 14:16 |

Cylinder Gas Pressure Values

| Cylinder Pressure (Start) | | |
|---------------------------|------|--|
| Low Range | 1710 | |
| High Range | 1710 | |

| Cylinder Pressure (End) | | |
|-------------------------|------|--|
| Low Range | 1700 | |
| High Range | 1700 | |

| Cylinder Gas Information | | | | |
|--|------------------|------------------|--|--|
| Low Calibration Gas High Calibration Gas | | | | |
| Cylinder Certification Number: | CC330083 | CC159459 | | |
| Cylinder Certification Date: | 2/11/2015 | 2/13/2015 | | |
| Cylinder Expiration Date: | 2/11/2018 | 2/13/2018 | | |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One | | |
| Concentration (ppm or % Ca): | 75.3 | 167.9 | | |

| Calibration Gas Audit Results | | | | |
|--------------------------------|--------|--------|--|--|
| Low Cal Gas High Cal Gas | | | | |
| Range of Allowance (±15%) Low | 63.99 | 14272 | | |
| Range of Allowance (±15%) High | 86.57 | | | |
| Test Run #1 | 72.88 | 180.9 | | |
| Test Run #2 | 74.46 | 179.3 | | |
| Test Run #3 | 74.40 | 179.6 | | |
| Average Result (Cm) | 73.914 | 179.93 | | |
| Accuracy (%) | 11824 | | | |
| Allowable Accuracy Error (%) | ± 15% | ± 15% | | |
| Test Results | | | | |

TEST WAS SUCCESSFUL!



Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: Unit: | 14-Al-146 | Calender Quarter: | FOURTH |
|-----------------|----------------------------|-------------------|-------------|
| Unit: | FLARE | Analyzer Span: | 0 - 300 PPM |
| Component: | HYDROGEN SULFIDE (H₂S) | Serial Number: | 1060 |
| Date: | Tuesday, December 06, 2016 | Technician: | BRYAN WINN |
| Start Time: | 11:36 | End Time: | 12:01 |

Cylinder Gas Pressure Values

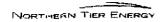
| Cylinder Pressure (Start) | | |
|---------------------------|------|--|
| Low Range | 1710 | |
| High Range | 1710 | |

| Cylind | er Pressure (End) | |
|------------|-------------------|---|
| Low Range | 1700 | ' |
| High Range | 1700 | |

| Cylinder Gas Information | | |
|---------------------------------|---------------------|----------------------|
| | Low Calibration Gas | High Calibration Gas |
| Cylinder Certification Number: | CC330083 | CC159459 |
| Cylinder Certification Date: | 2/11/2015 | 2/16/2015 |
| Cylinder Expiration Date: | 2/11/2018 | 2/16/2018 |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One |
| Concentration (ppm or % Ca): | 75.3 | 167.9 |

| Calibration Gas Audit Results | | |
|--------------------------------|-------------|--------------|
| | Low Cal Gas | High Cal Gas |
| Range of Allowance (±15%) Low | 64.01 | 142.72 |
| Range of Allowance (±15%) High | 86.60 | 193.09 |
| Test Run #1 | 72.18 | 164.59 |
| Test Run #2 | 71.79 | 165.52 |
| Test Run #3 | 70.54 | 166.35 |
| Average Result (Cm) | 71.50 | 165.48 |
| Accuracy (%) | -5.04 | -1.44 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | 7 |

TEST WAS SUCCESSFUL!



Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 14-AI-147 - RANGÉ A | Calender Quarter: | FOURTH |
|-------------|---|-------------------|---------------|
| Unit: | FLARE | Analyzer Span: | 0-5000 PPM |
| Component: | H ₂ S AS SULFUR DIOXIDE (SO ₂) | Serial Number: | SL-09790714 |
| Date: | Wednesday, December 07, 2016 | Technician: | JACOB PAZUREK |
| Start Time: | 13:44 | End Time: | 16:05 |

Cylinder Gas Pressure Values

| Cylinder Pressure (Stårt) | | |
|---------------------------|------|--|
| Low Range | 2190 | |
| High Range 2060 | | |

| Cylinder Pressure (End) | | |
|-------------------------|------|--|
| Low Range | 2180 | |
| High Range | 2050 | |

| Cylinder Gas Information | | | |
|---------------------------------|--------------------------|--------------------------|--|
| | Low Calibration Gas | High Calibration Gas | |
| Cylinder Certification Number: | CC501425 | CC467298 | |
| Cylinder Certification Date: | 5/20/2016 | 9/24/2015 | |
| Cylinder Expiration Date: | 5/20/2017 | 9/24/2018 | |
| Type of Cylinder Certification: | Certified Standard- Spec | Certified Standard- Spec | |
| Concentration (ppm or % Ca): | 1275.0 | 2782.0 | |

| Calibration Gas Audit Results | | |
|--------------------------------|-------------|--------------|
| | Low Cal Gas | High Cal Gas |
| Range of Allowance (±15%) Low | 1088.7/5 | 28647/0 |
| Range of Allowance (±15%) High | 1466.25 | 3199.30 |
| Test Run #1 | 1248.69 | 2759.30 |
| Test Run #2 | 1258.82 | 2785.93 |
| Test Run #3 | 1267.19 | 2779.44 |
| Average Result (Cm) | F: 11258.28 | 2774.89 |
| Accuracy (%) | 4) · 4) 32 | .a0.26 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | |

TEST WAS SUCCESSFUL!

NORTHERN TIER ENERGY

Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 8-AI-2A | Calender Quarter: | FOURTH |
|-------------|----------------------------|-------------------|------------|
| Unit: | FCC | Analyzer Span: | 0 - 10% |
| Component: | OXYGEN (O ₂) | Serial Number: | 3.249395.1 |
| Date: | Tuesday, December 20, 2016 | Technician: | BRYAN WINN |
| Start Time: | 12:14 | End Time: | 15:03 |

Cylinder Gas Pressure Values

| Cylinder Pressure (Start) | | |
|---------------------------|------|--|
| Low Range | 1240 | |
| High Range | 1440 | |

| Cylind | er Pressure (End) | |
|------------|-------------------|--------------|
| Low Range | 1200 | |
| High Range | 1430 | |

| Cylinder Gas Information | | |
|---------------------------------|---------------------|----------------------|
| | Low Calibration Gas | High Calibration Gas |
| Cylinder Certification Number: | CC113590 | SG9142478BAL |
| Cylinder Certification Date: | 1/21/2010 | 1/20/2010 |
| Cylinder Expiration Date: | 1/21/2018 | 1/20/2018 |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One |
| Concentration (ppm or % Ca): | 5.076 | 9.995 |

| Calibration Gas Audit Results | | | |
|--------------------------------|--|--------------|--|
| | Low Cal Gas | High Cal Gas | |
| Range of Allowance (±15%) Low | 4431 | 3.50E | |
| Range of Allowance (±15%) High | 75.841 X 74 | 111497 | |
| Test Run #1 | 5.06 | 10.11 | |
| Test Run #2 | 5.06 | 10.14 | |
| Test Run #3 | 5.05 | 10.13 | |
| Average Result (Cm) | 15 No. of 15 106 Persons | 1043 | |
| Accuracy (%) | ************************************** | 1 32 T | |
| Allowable Accuracy Error (%) | ± 15% | ± 15% | |
| Test Results | | | |

TEST WAS SUCCESSFUL!

MORTHERN TIER ENERGY

Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 8-AI-2B | Calender Quarter: | FOURTH |
|-------------|---------------------------|-------------------|--------------|
| Unit: | FCC | Analyzer Span: | 0 - 3000 PPM |
| Component: | SULFUR DIOXIDE (SO₂) | Serial Number: | 3.240138.2 |
| Date: | Monday, December 19, 2016 | Technician: | BRYAN WINN |
| Start Time: | 12:14 | End Time: | 15:03 |

Cylinder Gas Pressure Values

| Cylinder Pressure (Start) | | |
|---------------------------|------|--|
| Low Range | 1400 | |
| High Range | 1290 | |

| Cylinder Pressure (End) | | |
|-------------------------|------|--|
| Low Range | 1395 | |
| High Range | 1260 | |

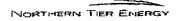
| Cylinder Gas Information | | | | |
|---------------------------------|---------------------|----------------------|--|--|
| | Low Calibration Gas | High Calibration Gas | | |
| Cylinder Certification Number: | W479174 | CC152607 | | |
| Cylinder Certification Date: | 9/16/2011 | 9/20/2011 | | |
| Cylinder Expiration Date: | 9/16/2019 | 9/20/2019 | | |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One | | |
| Concentration (ppm or % Ca): | 782.0 | 1699.0 | | |

| Calibration | Gas Audit Results | 3 |
|--------------------------------|-------------------|---------------|
| | Low Cal Gas | High Cal Gas |
| Range of Allowance (±15%) Low | A 664-70 1 | Na: 231444-15 |
| Range of Allowance (±15%) High | 789930 T | |
| Test Run #1 | 783.50 | 1705.41 |
| Test Run #2 | 784.11 | 1703.89 |
| Test Run #3 | 782.59 | 1698.65 |
| Average Result (Cm) | 783.40 | 1702!65 |
| Accuracy (%) | | V 7 NO 21 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | |

TEST WAS SUCCESSFUL!

NOTE: Test Method and Procedures can be referenced from United States Environmental Protection Agency (US EPA) Code of Federal Regulations (CFR) Title 40 Part 60 Appendix F (5.2).

5



Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 8-AI-5 | Calender Quarter: | FOURTH |
|-------------|----------------------------|-------------------|--------------|
| Unit: | FCC | Analyzer Span: | 0 - 1000 PPM |
| Component: | CARBON MONOXIDE (CO) | Serial Number: | 3.249390.1 |
| Date: | Tuesday, December 20, 2016 | Technician: | BRYAN WINN |
| Start Time: | 12:15 | End Time: | 15:03 |

Cylinder Gas Pressure Values

| Cylinder Pressure (Start) | | |
|---------------------------|------|--|
| Low Range | 1240 | |
| High Range | 1440 | |

| Cylinder Pressure (End) | | |
|-------------------------|------|--|
| Low Range | 1200 | |
| High Range | 1430 | |

| Cylinder Gas Information | | | | |
|---------------------------------|---------------------|----------------------|--|--|
| | Low Calibration Gas | High Calibration Gas | | |
| Cylinder Certification Number: | CC113590 | SG9142478BAL | | |
| Cylinder Certification Date: | 1/21/2010 | 1/20/2010 | | |
| Cylinder Expiration Date: | 1/21/2018 | 1/20/2018 | | |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One | | |
| Concentration (ppm or % Ca): | 237.40 | 545.20 | | |

| Calibration Gas Audit Results | | |
|--------------------------------|-----------------|--------------|
| | Low Cal Gas | High Cal Gas |
| Range of Allowance (±15%) Low | 20179 | 463 42 |
| Range of Allowance (±15%) High | 273.01 | |
| Test Run #1 | 246.80 | 548.18 |
| Test Run #2 | 246.80 | 549.13 |
| Test Run #3 | 246.82 | 548.87 |
| Average Result (Cm) | 246.81 | 548 73 |
| Accuracy (%) | 4 10 15 3 196 B | 0.65 |
| Allowable Accuracy Error (%) | ± 15% | ± 15% |
| Test Results | | |

TEST WAS SUCCESSFUL!

NORTHERN TIER ENERGY

Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 8-AI-6 | Calender Quarter: | FOURTH |
|-------------|----------------------------|-------------------|--------------|
| Unit: | FCC | Analyzer Span: | 0 - 1000 PPM |
| Component: | CARBON DIOXIDE (CO₂) | Serial Number: | 3.249390.1 |
| Date: | Tuesday, December 20, 2016 | Technician: | BRYAN WINN |
| Start Time: | 12:15 | End Time: | 15:03 |

Cylinder Gas Pressure Values

| Cylinder Pressure (Start) | | |
|---------------------------|------|--|
| Low Range | 1240 | |
| High Range | 1440 | |

| Cylinder Pressure (End) | | | | |
|-------------------------|------|--|--|--|
| Low Range | 1200 | | | |
| High Range | 1430 | | | |

| Cylinder Gas Information | | | | |
|---------------------------------|---------------------|----------------------|--|--|
| | Low Calibration Gas | High Calibration Gas | | |
| Cylinder Certification Number: | CC113590 | SG9142478BAL | | |
| Cylinder Certification Date: | 1/21/2010 | 1/20/2010 | | |
| Cylinder Expiration Date: | 1/21/2018 | 1/20/2018 | | |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One | | |
| Concentration (ppm or % Ca): | 7.47 | 16.25 | | |

| Calibration Gas Audit Results | | | | |
|--------------------------------|-------------|--------------|--|--|
| | Low Cal Gas | High Cal Gas | | |
| Range of Allowance (±15%) Low | 6.35 | 18.81 | | |
| Range of Allowance (±15%) High | 3,59 | 18.69 | | |
| Test Run #1 | 7.46 | 16.10 | | |
| Test Run #2 | 7.46 | 16.11 | | |
| Test Run #3 | 7.46 | 16.10 | | |
| Average Result (Cm) | 7.43 | 16.10 | | |
| Accuracy (%) | -0.12 | -0.90 | | |
| Allowable Accuracy Error (%) | ± 15% | ± 15% | | |
| Test Results | | | | |

TEST WAS SUCCESSFUL!

NORTHERN TIER ENERGY

Saint Paul Park Refinery Cal Gas Audit

Saint Paul Park, MN

| Tag #: | 8-AI-7 | Calender Quarter: | FOURTH |
|-------------|---------------------------------------|-------------------|-------------|
| Unit: | FCC | Analyzer Span: | 0 - 500 PPM |
| Component: | OXIDES OF NITROGEN (NO _x) | Serial Number: | 3.240138.2 |
| Date: | Tuesday, December 20, 2016 | Technician: | BRYAN WINN |
| Start Time: | 12:14 | End Time: | 15:03 |

Cylinder Gas Pressure Values

| Cylinder Pressure (Start) | | | | |
|---------------------------|------|--|--|--|
| Low Range 1120 | | | | |
| High Range | 1280 | | | |

| Cylinder Pressure (End) | | | | |
|-------------------------|------|--|--|--|
| Low Range | 1110 | | | |
| High Range | 1275 | | | |

| Cylinder Gas Information | | | | | | |
|--|------------------|------------------|--|--|--|--|
| Low Calibration Gas High Calibration Gas | | | | | | |
| Cylinder Certification Number: | SG9113283BAL | SG9163697BAL | | | | |
| Cylinder Certification Date: | 2/23/2011 | 2/24/2011 | | | | |
| Cylinder Expiration Date: | 2/23/2019 | 2/24/2019 | | | | |
| Type of Cylinder Certification: | EPA Protocol One | EPA Protocol One | | | | |
| Concentration (ppm or % Ca): | 123.5 | 274.5 | | | | |

| Calibration Gas Audit Results | | | |
|--------------------------------|----------------|-----------------------|--|
| | Low Cal Gas | High Cal Gas | |
| Range of Allowance (±15%) Low | 7104198 FT 444 | 233 33 4 | |
| Range of Allowance (±15%) High | 142.03 | 315.68 | |
| Test Run #1 | 123.33 | 270.40 | |
| Test Run #2 | 123.47 | 270.41 | |
| Test Run #3 | 124.00 | 270.55 | |
| Average Result (Cm) | 123 603 | 270.45 | |
| Accuracy (%) | W 50 0080 W 17 | 15 W T 2 1947 X 5 3 2 | |
| Allowable Accuracy Error (%) | ± 15% | ± 15% | |
| Test Results | | | |

TEST WAS SUCCESSFUL!



Opacity Certification Services, LLC

A Proud Veteran-Owned Business

Raleigh, North Carolina 27615
Phone 919.215.9384
Fax 919.846.6041

Web: www.opacitycert.com

Results of NIST-Traceable Opacity Filter (Audit Attenuators) Certification

Customer: St. Paul Park Refining Co.

| Date of Certification: | May 18, 2016 | Dogument No. | 051816-02 |
|------------------------|--------------|--------------|-----------|
| Date of Expiration: | Way 17, 2017 | Document No. | U51810-U2 |

Filters (Attenuators) are certified in accordance with 40 CFR Part 60, Subpart B, "Performance Specification 1", as well as the most current ASTM D6216 standard and Opacity Procedure 3. Laboratory spectrophotometer is calibrated daily by use of NIST SRM2031b standard reference materials.

Spectrophotometer

| Spectrophotometer: Varian (HP) Cary 50 Conc | | Serial Number: EL06023153 | |
|---|--|---------------------------|---------------------------------------|
| Scanning Range: 380-780nm Data Interva | | : 10nm | Spectral Bandpass: 1.5nm |
| Maximum Accuracy: ± 0.25 Absolute Opacity | | Laboratory T | emperature: 72° F (± 3°)/22° C (± 1°) |

NIST Standard Reference Material (SRM)

| SRM Type: NIST 2031b series | Serial Number: Blank; 709-10; 709-30; 709-90 | |
|---|--|--|
| SRM Date of Certification: January 27, 2015 | SRM Date of Expiration: January 31, 2017 | |

Opacity Monitor

| Opacity Monitor Make/Model: Thermo Environmental 440 series | | | | 14-11111 |
|---|---------|-----|-----------------------------------|----------|
| Monitor Light Source: Incandescent | | | Straight stack correction factor: | 1.000 |
| Angle of Incidence: | 10 degr | ecs | Correction factor (if given): | 1.000 |

| Opacity Filte | er Data | Set/Stack ID#: Set #1 | | | | | | | |
|---------------|---------|-----------------------|--------------------|---------------------|--------------|--|--|--|--|
| Serial Number | Opacity | Transmittance | Optical Density | Previous Opacity | Δ Opacity | | | | |
| 3002 | 10.75% | 89.25% | 0.0494 | 10.75% | 0.00 | | | | |
| SK22 | 19.61% | 80.39% | 0.0948 | 19.76% | -0.15 | | | | |
| SK23 | 34.49% | 65.51% | 0.1837 | 34.52% | -0.03 | | | | |

Signature of Spectrophotometer Operator

MINNESOTA POLLUTION CONTROL AGENCY

AQD FILE #: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 | NOx | co | CO2 | 02 | TRS | (H2\$) | HCL | Opacity |
|--|-----------------------|------------------|---------------|----------|---------------|-------------|---------------|--------------|--------------|
| | Other: | | | | | | | | |
| | | | | _ | MONITOR | | | | |
| REPORTING QUARTER: | Fourth, 2016 | | | | MODEL: | Vista 2 | 2020 GC | | |
| | | | | _ | | | | | |
| | | | | | MFR: | Combust | tion Engin | eering | |
| FACILITY: St. Paul Park Ref | ining Co. LLC | · | | _ | | | | | |
| | | | | _ | | | | | |
| | | | | | EMISSION | | ID AVERAGI | | |
| EMISSION SUBJECT ITEM: | COMG7 | | | _ | | | n H2S - 3 | | |
| | | | | | | 60 ppm | H2S - 365 | day roll | ing average |
| EMICCION LINIT/CV | Refinery fuel ga | s system | | | EMISSION | DACIC. | 40 000 0 | • | |
| EMISSION UNIT(S): Refinery fuel gas system | | | | | EMISSION | DASIS. | NSPS Sub | | |
| | | | | | | | Noro Sub | parc va | |
| ASSOCIATED ITEMS: | EQUI1, EQUI3, EQ | HT4. FOUTS. | EOUTS E | OUT7 | POUTA. | | | | |
| EQUI9, EQUI10, EQ | | | | | | | | | |
| EQUI19, EQUI20, E | | EQUI326, EQ | | | | | OUI43. and | EQUI44. | - |
| | | | | | - | | | | |
| NOTE: H2S limits within | 40 CFR 60 Subp. | Ja only app | ly to EQU | 142, I | 00143, an | d EQUI44 | ١. | | |
| | | | | | | | | | |
| | | | | | TOTAL OP | ERATING | HOURS | | |
| | | | | | OF EMISSI | ON UNIT: | - | 2209 | <u>_</u> |
| ſ <u></u> | | | | | 1 | | | | |
| A. EMISSION DATA SUMMARY | | | | | B. CEM PE | RFORMA | NCE SUMMA | URY . | |
| 1 DURATION OF EXCES | S EMISSIONS (HRS) | 3-hour | 365-day | | | TARLIC | ON OF CEM | DOWNTIME | DURING |
| a) Startup/Shutdown | 30 EMIODIONO (FINO) | 0.00 | 0.00 | | | | E OPERATIO | | DONING |
| b) Control equipment | | 0.00 | 0.00 | - | | | or malfunctio | | 0.00 |
| c) Process problems | | 0.00 | 0.00 | _ | | • | nonitor malfu | | 0.00 |
| d) Other known causes | l | 0.00 | 0.00 | - | | c) QA ca | | | 0.00 |
| e) Unknown causes | | 0.00 | 0.00 | _ | | d) Other | known cause | es | 85.00 |
| f) Soot blowing | | 0.00 | 0.00 | _ | | e) Unkno | own causes | | 0.00 |
| g) Fuel problems | | 0.00 | 0.00 | _ | ł | | | | |
| 2 TOTAL DURATION (HI | RS) | 0.00 | 0.00 | _ | : | 2 TOTAL I | DURATION (| HRS) | <u>85.00</u> |
| 3 PERCENT OF TOTAL | | | | | : | PERCE | NT OF TOTA | l. | |
| EXCESS EMISSIONS | | 0.00% | 0.00% | _ | | CEM DO | WNTIME | | 3.85% |
| | | | | | <u> </u> | | | | |
| | FOR OPACITY, RECO | ORD ALL TIME | S IN MINUT | ES. FO | OR GASES, I | RECORD | ALL TIMES I | N HOURS. | |
| Ļ. | | | | | | | | | . * 5% |
| % Total Excess Emissions = | | Total Duration | of Excess | Emissio | ns / (Total O | perating T | ime - CEM D | owntime) | |
| % Total CEM Downtime = | | CEM Downtin | ne / Total Or | neration | Time | | | | |
| | | OCHI DOMINI | ic / rotal Op | ~ rainiy | rinic | | | | |
| NOTES: | | | | | | | | | ·-· |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | ···· |
| | | | | | | | | | |
| If no exceedances: I certify that the | required analyses wer | e made, that I a | am familiar v | with the | results, and | that to the | best of my k | nowledge th | ere were no |
| exceedances during the reporting p | | | | | | | | | |
| SUBMITTED BY: | See certificatio | n page at f | ront of r | eport | | | | DATE: | |
| | | | | | | | | | |

CONTINUOUS EMISSION MONITOR EXCESS EMISSION REPORT

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|---|----------------------|-----------------------|-------------------------------|
| EMISSION UNIT(S): | | Retinery fuel gas s | ystem |
| POLLUTANT MONITORED: | | H2S | |
| D. T.F.(IMF | TOTAL DURATION (HRS) | MAX. CONC. | 04110510000507145 107104 |
| DATE/TIME | (FIRS) | (ppm, 3-hr average) | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | - | |
| b) Control equipment 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| d) Other known causes 10/1/2018 1/1/2017 Total | 0.00 | _No excess emissions. | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | |
| f) Soot blowing 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| g) Fuel problems 10/1/2016 1/1/2017 | | No excess emissions | |

Total

0.00

CONTINUOUS EMISSION MONITOR EXCESS EMISSION REPORT

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AT ID 447) |
|--|---------------------------|--------------------------------------|-------------------------------|
| EMISSION UNIT(S): | | Refinery fuel gas sy | vstem_ |
| POLLUTANT MONITORED: | | H2S | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. CONC. (ppm, 365-day average) | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown | | | |
| 10/1/2016 | | | |
| 1/1/2017 | · · · · · · · | No excess emissions. | |
| Total | 0.00 | | |
| b) Control equipment 10/1/2016 | | No sussesses and allows | |
| 1/1/2017 _ Total | 0.00 | No excess emissions. | |
| lotai | 0.00 | | |
| c) Process problems 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| d) Other known causes 10/1/2016 1/1/2017 | | No excess emissions, | |
| Total | 0.00 | | |
| e) Unknown causes 10/1/2016 1/1/2017 | | No excess emissions, | |
| Total | 0.00 | _ NO excess emissions, | |
| f) Soot blowing 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | _110 0.0000 01110001010. | |
| g) Fuel problems 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) | |
|--------------------------------------|----------------|---|-------------------------------|--|
| EMISSION UNIT(S): | | Retinery tuel gas system | | |
| POLLUTANT MONITORED: | | H2S | | |
| | TOTAL DURATION | | | |
| DATE/TIME | (HRS) | CAUSE/CORRECTIVE ACTION | | |
| a) Monitor malfunction | | | | |
| | . 0.00 | _ | • | |
| Total | 0.00 | | | |
| b) Non-monitor malfunction | | | | |
| | 0.00 | | | |
| Total | 0.00 | - | | |
| c) QA calibration | | | | |
| | | | | |
| Total | 0.00 | - | | |
| d) Other known causes | | | | |
| 10/19/2016 9:00 | | | | |
| 10/19/2016 17:00 | 8.00 | Preventive maintenance. | | |
| 10/26/2016 12:00 10/26/2016 14:00 | 2.00 | Missing data. | | |
| 12/9/2016 7:00 | 2.00 | missing data. | , | |
| 12/12/2016 10:00 | 75.00 | Failed morning calibration. Low flow of calibration | n gas to analyzer. | |
| Total | 85.00 | | | |
| e) Unknown causes | , | | | |
| | 0.00 | | | |
| Tötal | -0.00 | - | | |

MINNESOTA POLLUTION CONTROL AGENCY

AQD FILE #: #0203 (AT ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 Other: | NOx Flow | со | CO2 | 02 | TRS | H2S | HCL | Opacity | |
|---|--|-------------------------------|---------------|-----------------|-------------------------|--------------------|---------------------------|-------------|-----------------------------------|-------------------------|
| REPORTING QUARTER: | Fourth, 201 | | | _ | MONITO MODEL MFR: | | Flow R | ate/FG H2 | S CEM | |
| FACILITY: | | | | | **** | | - | | | |
| St. Paul Park Re | fining Co. LL | С | | | | | | | | |
| | | | | | | | | | | |
| EMISSION SUBJECT ITEM: EQUI1 | | | | _ | EMISSN | | SO2/hr | - 3 hour | rolling av | |
| CHICOGON I MITCH | Alkylation | | | | | | | | | |
| EMISSION UNIT(S): | | | | _ | 514100 1 | 011 010 | | | | |
| | Heater 28-B | -1 | | _ | EMISSI | ON BASIS: | | SIP for | O2 NAAQS | |
| ASSOCIATED ITEMS: | COMG7, EQUI: | 163, EQUI1 | 73, STRU4 | 7, COMG20 | | _ | | | | |
| NOTE: There was zero f | uel oil runti | me during | the quart | er. | | | | | | |
| | | | ··· | | OPERA | TING HOU | RS OF EM | lission uni | | |
| | | | | | | | | Total | Fuel Gas | Fuel Oil |
| | | | | | | | | 2156 | 2156 | 0 |
| A. EMISSION DATA SUMMAR | Y | | | | B CEM | Performan | ce Summ | 1207 | | |
| DURATION OF EXCE | | HRS) | | | | | | A DOWNTIM | E DURING | |
| 1 | | ,,,,, | lb/hr | ib/mmbtu | ' | SOURCE | | | Comme | |
| a) Startup/Shutdown | | | 0.00 | 0.00 | ŀ | OODINGE | O. C.O., | O11 (71110) | Fuel Gas | Fuel Oil |
| b) Control equipment | | • | 0.00 | 0.00 | ~ | a) Monitor | malfunctio | วท | 0.00 | 0.00 |
| c) Process problems | | - | 0.00 | 0.00 | 1 | b) Non-mo | | | 0.00 | 0.00 |
| d) Other known cause | es. | • | 0.00 | 0.00 | 1 | c) QA calib | | 21.000 | 0.00 | 0.00 |
| e) Unknown causes | | • | 0.00 | 0.00 | ٦ - | d) Other ka | | :es | 0.00 | 0.00 |
| f) Soot blowing | | • | 0.00 | 0.00 | 1 | e) Unknow | | ,,,, | 0.00 | 0.00 |
| g) Fuel problems | | • | 0.00 | 0.00 | 1 | 0, 0,,,,,,, | | | | V. U. |
| 2 TOTAL DURATION (| HRS) | | 0.00 | 0.00 | ┨ 。 | TOTAL DL | IPATION | (HDC) | 0.00 | 0.00 |
| 3 PERCENT OF TOTAL | | - | <u> </u> | 0.00 | 71 | PERCENT | | | 0.00 | 0.00 |
| EXCESS EMISSIONS | | | 0.00% | 0.00% | <u> </u> | CEM DOW | | -L | 0.00% | 0.00% |
| | FOR OPACITY, | RECORD AL | L TIMES IN | MINUTES. F | OR GAS | ES, RECOR | D ALL TI | MES IN HOU | RS. | |
| % Total Excess Emissions = | | Total Duration | of Evance I | Emissions I/T | otal Once | otica Tima | CEM Do | tia\ | | |
| | | Cai Duration | OI LACESS I | Emissions / (T | otal Oper | amy thre- | CEM DO | anune) | | |
| % Total CEM Downtlme = | | CEM Downtim | ne / Total Op | erating Time | | | | | | |
| NOTES: There was zero f | uel oil runti | me during t | the quart | er. | | <u></u> | | | | |
| | | | | | | | | · | | |
| | · | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| If no exceedances: I certify tha exceedances during the reporti | t the required analing period. I certify | yses were ma that I am fam | de, that I am | n familiar with | the result | s, and that t | o the best to the best | of my knowl | edge there wer edge the inform | ė no nation is valid |
| SUBMITTED BY: | See certific | | | | • | | | DATE: | | |

EXCESS EMISSION REPORT

| REPORTING QUARTER: | | Fourth, 2016 | | AQD FILE #: #0203 (AI ID 447) |
|---|----------------------------|----------------------|---------------------------------------|-------------------------------|
| EMISSION UNIT(S): | | GP007, EQUI1 | | _ |
| POLLUTANT MONITORED: | | SO2 lb/hr | · · · · · · · · · · · · · · · · · · · | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. EMISSIONS RATE | CAUSE/CORRECTIVE ACTION | <u> </u> |
| a) Startup/Shutdown 10/1/2016 1/1/2017 _ | | No excess emissions. | | |
| Total | 0.00 | | | |
| b) Control equipment 10/1/2016 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | - | | |
| c) Process problems 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | | |
| d) Other known causes 10/1/2016 1/1/2017 _ | | No excess emissions. | | |
| Tota¹ | 0.00 | | | |
| e) Unknown causes 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | | |
| f) Soot blowing 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | | |
| g) Fuel problems 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | | |

EXCESS EMISSION REPORT

| REPORTING QUARTER: | | Fourth, 2016 | | AQD FILE #: #0203 (AT ID 447) |
|---|----------------------------|----------------------|-------------------------|-------------------------------|
| EMISSION UNIT(S): | | GP007, EQUI1 | | - |
| POLLUTANT MONITORED: | | SO2 lb/mmbtu | | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. EMISSIONS RATE | CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shuldown 10/1/2016 1/1/2017 _ | | No excess emissions. | | |
| Total | 0.00 | | | |
| b) Control equipment 10/1/2018 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | • | | |
| c) Process problems 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | | |
| d) Other known causes 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | | |
| e) Unknown causes 10/1/2016 | 0.22 | | | |
| 1/1/2017 _ Total | 0.00 | No excess emissions. | | |
| f) Soot blowing 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | |
| g) Fuel problems 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Fourth, 2016 | | AQD FRE #: #0203 (A | I ID 447) | |
|----------------------------|----------------------------|--|----------------|---------------------|-----------|---|
| EMISSION UNIT(S): | | Heater 28-B-1 | (EQUI1, GP007) | | | |
| POLLUTANT MONITORED: | | Fuel Gas Flow | Rate | | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECT | IVE ACTION | | | |
| a) Monitor malfunction | 0.00* | 7 - 12 - 1 - 15 - 1 - 15 - 1 - 1 - 1 - 15 - 1 - 1 - 1 | | | | |
| b) Non-monitor malfunction | | | | | | |
| Total | 0.00 | | | | | |
| c) QA calibration | 0.00 | | | | | - · · · · · · · · · · · · · · · · · · · |
| d) Other known causes | | | | | | |
| Total | 0.00 | - | | | | |
| e) Unknown(causes. | 0.00 | | | | * | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE # #0203 (AI ID 447) |
|----------------------------|----------------------------|------------------------------|--|
| EMISSION UNIT(S): | | Heater 28-B-1 (EQUI1, GP007) | |
| POLLUTANT MONITORED: | | Fuel Oil Flow Rate | - |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | |
| a) Monitor malfunction. | 0.00 | | |
| b) Non-monitor malfunction | | | |
| Total | 0.00 | - | |
| c) QA calibration | 0:00 | | ate of the second secon |
| d) Other known causes | | | |
| Total | 0.00 | - | |
| e) Unknown causes. | \$10.00 | | The state of the s |

MINNESOTA POLLUTION CONTROL AGENCY

AGD FILE #: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 | sox | NOx | co | CO2 | 02 | TRS | H2S | HCL | Opacity |
|---|--------------|----------------|---------------|----------|--------------|--------------------------------|---------------|-------------|--------------|---------------------------|
| | Other: | Metal HAP | ner MacT | Suhnart | 111111 | | | | | |
| | ouiei. | MCCCC IDG | pur .b.c. | | MONITOR | | | | | |
| REPORTING QUARTER: | Fourth, 20 | .16 | | | MODEL: | 440 | | | | |
| REPORTING QUARTER: | FOULCH, 20 | 16 | | _ | MFR: | | Electron | Corporation | on. | |
| FACILITY: | | | | | MIL IX. | | | poru | | |
| St. Paul Park R | efining Co. | LLC | | | | | | | | |
| <u> </u> | | | | _ | | | | | | |
| *** | | | | _ | EMISSION L | IMITS AND A | VERAGINO | 3 TIME: | | |
| EMISSION SUBJECT ITEM: | EQUI2 | | | | | | | ept for o | ne six | |
| | | | | _ | | _ | | any one | | |
| | | | | | | | | | | |
| EMISSION UNIT(S): | FCC regena | rator | | _ | EMISSION B | ASIS: | | | | |
| | | | | | | MN Rule | 7011.140 | 5, gubo. | l, Item B | |
| | | | | | | 40 CFR | 63.1564 | | | |
| ASSOCIATED ITEMS: | EQUI164, T | REA17 | | _ | | | | | | |
| | | | | | | | | | | |
| PROCESS UNIT DESCRIPTION | ON: | EQUI2 is a | pproximat | ely a 3 | 0,500 bpd | tluidized | catalyti | c crackin | g unit. | |
| | | The materia | als from | the FCC | are route | d to the | FCC colum | n for fra | ctionation. | |
| | | | | | TOTAL OPE | RATING HO | URS | | | |
| | | | | | OF EMISSIO | N UNIT: | | 2209 | | |
| r | | | | | | | | | | |
| A. EMISSION DATA SUMMAI | RY | | | | B. CEM PER | FORMANCE | SUMMAR | <u> </u> | | |
| | | | | 1 | | | | | | |
| 1 DURATION OF EXC | ESS EMISSION | S (MIN) | | | | | | DOWNTIME | DURING | |
| a) Startup/Shutdown | | - | 0.00 | - | | | OPERATIO | | | |
| b) Control equipment | | - | 0.00 | - ! | | a) Monitor | malfunction | ו' | 0.00 | |
| c) Process problems | | - | 0.00 | _ | | b) Non-mo | onitor maifui | nction | 0.00 | |
| d) Other known cause | g S | - | 0.00 | _ | | c) QA cali | bration | | 660.00 | |
| e) Unknown causes | | - | 0.00 | _ i | | - | nown cause | 15 | 0.00 | |
| f) Soat blawing | | - | 0.00 | _ | | e) Unknov | vn causes | | 0.00 | ! |
| g) Fuel problems | | _ | 0.00 | _ | | | | | | |
| 2 TOTAL DURATION (| MIN) | _ | 0.00 | _ | | 2 TOTAL DI | URATION (I | MIN) | 660.00 | |
| 3 PERCENT OF TOTA | uL. | | | | | 3 PERCEN | T OF TOTAL | L | | |
| EXCESS EMISSION | S | _ | \$00.0 | _ | | CEM DO | NNTIME | | 0.50% | |
| | | | | | | | | | | |
| | FOR OPACIT | Y, RECORD A | LL TIMES I | N MINUT | ES. FOR GA | SES, RECO | RD ALL TIM | IES IN HOU | RS. | |
| | | | | | | | | | | |
| % Total Excess Emissions = | | Total Duration | of Excess E | missions | / (Total Ope | rating Time - | CEM Down | time) | | |
| | | | | | | | | , | | |
| % Total CEM Downlime = | | CEM Downtim | ie / Total Op | eraung i | ime | | | | | |
| NOTES: (1) According to | MN Rules 7 | 011.1405, St | ubpt. 1, | B and M | ACT II, ar | exceedan | ce of thi | is standar | d occurs whe | never |
| any one-hour per | iod contains | s two or mo | re 6-minu | te peri | ods during | which th | e average | opacity | exceeds 30%. | <u></u> |
| As allowed in th | above note | ed regulation | on, if tw | o or mo | re 6-minut | e average | is excee | eded in an | y one hour, | it is |
| reported in the | summary at t | the front of | f this re | port. | | | | | | |
| | | | | | | | | | | |
| | **** | | | | | | | | | |
| If no exceedances: I certify the reporting period. I certify that t | | | | | | | | | | no exceedances during the |
| ,, | | | • | | | or rily knowle | aña ala iuro | | mu. | |
| SUBMITTED BY: | See certif. | ication pag | e at fron | t of re | port | | | DATE: | | |

CONTINUOUS EMISSION MONITOR EXCESS EMISSION REPORT

| REPORTING QUARTER: | | Fourth, 2 | 016 | AQD F | PLE #: #0203 (AI ID 447) |
|-----------------------|-------------------|------------|-----------------|------------------------|--------------------------|
| EMISSION UNIT(S): | | FCC regen | erator | | |
| POLLUTANT MONITORED: | | Opacity | <u> </u> | (mr. m | |
| | TOTAL DURATION | | | | |
| DATE/TIME | (MIN) | MAX. OP | ACITY (%) C | AUSE/CORRECTIVE ACTION | |
| | V | # of 6 min | Max Opacity | | |
| | | periods | (%) | | |
| a) Startup/Shutdown | | | | | |
| 10/1/2016 | | | | | |
| 1/1/2017 | | | | | |
| 4-4-1 | 0.00 | | _No excess emis | sions. | |
| total | 0.00 | 0 | | | |
| b) Control equipment | | | | | |
| 10/1/2016 | | | | | |
| 1/1/2017 | | | No excess emis | sions. | |
| total | 0.00 | 0 | | | |
| | | | | | |
| c) Process problems | | | | | |
| 10/1/2016 | | | | | |
| 1/1/2017 | 0,00 | | _No excess emis | sions. | |
| totat | 0.00 | 0 | | | |
| d) Other known causes | | | | | |
| 10/1/2016 | | | | | |
| 1/1/2017 | | | No excess emis | sions. | |
| total | 0,00 | 0 | | | |
| e) Unknown causes | | | | | |
| 10/1/2016 | | | | _ | |
| 1/1/2017 | | | _No excess emis | sions. | |
| totat | 0.00 | 0 | | | |
| f) Soot blowing | | | | | |
| 10/1/2016 | | | | | |
| 1/1/2017 | | | No excess emis | sions. | |
| total | 0.00 | 0 | - | | |
| | | | | | |
| g) Fuel problems | | | | | |
| 10/1/2016 | | | | .1 | |
| 1/1/2017 | | | _No excess emis | sions, | |
| total | 0.00 | D | | | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| | | | DOWNIIME | REPORT | | |
|---|----------------------------|---|----------|------------------|-----------------|--|
| REPORTING QUARTER: | | Fourth, 2016 | | AQD FILE #: #0 | 203 (AI ID 447) | |
| EMISSION UNIT(S): | | FCC regenerator | | | | |
| POLLUTANT MONITORED: | | Opacity | | | | |
| DATE/TIME | TOTAL DURATION (MIN) | CAUSE/CORRECTIVE | E ACTION | <u></u> | | |
| a) Monitor malfunction Total | 0.00 | | | 7 11 d 1 d | | |
| b) Non-monitor malfunction | | | | | | |
| Total ⁻ | 0.00 | - | | | | |
| c) OA Calibration 10/1/2016 12/201/2016 12/201/2016 10/20 11/15/2016 10/20 11/15/2016 11/2016 | 552.0 (18:00 90.00) | Daily calibrations Calibration Calibration Quarterly audit | | | | A STATE OF THE STA |
| d) Other known causes | | | | | | |
| | | | | | | |
| Total | 0.00 | - | | | | |
| e) Unknown causes | 710.00° | general Peterson | | | | |
| | | | | | | |

MINNESOTA POLLUTION CONTROL AGENCY

AQD FILE #: #0203 (AT TD 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 | sox | NOx C | \odot | CO2 | O2 | TRS | H2S | HCL | Opacity |
|--|--------------------------------------|-------------------|----------------|----------|--------------------|-------------|-------------------|----------------------|---|----------------------------|
| | Other: | Organic HA | P per MACT | Subpar | rt ww | | | | | |
| | | | | | ONITOR | | | | | |
| REPORTING QUARTER: | Fourth, 20 | 16 | | M | IODEL: | Advance | Optima (U) | ras 14) Gas | Analyzer | |
| FACILITY: | | | | N | 1FR: | ABB | | | | |
| St. Paul Park Refining | Co. LLC | | | | | | | | | |
| | | | | _ | | | | | | |
| ENTROIDE CUR LEGT ITEM | W01170 | | | E | MISSION L | | VERAGE TIN | | | |
| EMISSION SUBJECT ITEM: | EQUI2 | | | | | 500 ppmv | /a - 1 nous | average | • | |
| | | | | | | | | | | |
| EMISSION UNIT(S): | FCC regene: | rator | | E | MISSION B | | | | | |
| | | | | | | | | 0 CFR 60.1 | 03 (a) | |
| ASSOCIATED ITEMS: | EQUI164, T | DEA17 | | | | | 3.1565 (a) | | Table 8, Opti | |
| ASSOCIATED ITEMS. | EQUITOR, II | KARL / | | | | AU CFR 6 | 53, MACI 5 | ippart ouo, | rable a, opci | .011 2 |
| PROCESS UNIT DESCRIPTION: | • | EQUI2 is a | fluidized | _cataly | tic crac | king unit | | | | |
| | | The materi | als from t | he FCC | are rout | ed to the | FCC colum | n for frac | tionation. | |
| | | | | - | ·07 000 | | | | | |
| | | | | | OTAL OPE | RATING HO | JUR\$ | | | |
| | | | | | n civilogic | N DAIL. | _ | 2209 | | |
| A. EMISSION DATA SUMMARY | | | | В | CEM PER | FORMANCI | E SUMMARY | | | |
| | | | | | | | | | | |
| 1 DURATION OF EXCESS EMIS | ISIONS (HRS) | | | | 1 | | | OWNTIME DL | IRING | |
| a) Startup/Shutdown | | - | 3.00 | | | | OPERATION | (HRS) | | |
| b) Control equipment | | - | 0.00 | | | • | malfunction | | 0.00 | |
| c) Process problems d) Other known causes | | - | 2.00 | | | c) QA calit | onitor malfunc | lion | 1.00 | |
| e) Unknown causes | | - | 0.00 | | | • | nown causes | | 10.00 | |
| f) Soot blowing | | - | 0.00 | | | e) Unknow | | | 0.00 | |
| g) Fuel problems | | - | 0.00 | | | _, | | | | |
| 2 TOTAL DURATION (HRS) | | • | 5.00 | 1 | 2 | TOTAL DL | JRATION (HE | RS) | 11.00 | |
| 3 PERCENT OF TOTAL | | - | , | 1 | | | OF TOTAL | • | | |
| EXCESS EMISSIONS | | _ | 0.23% | 1 | | CEM DOW | VNTIME | | 0.50% | |
| | | | | | | | | | | |
| | FOR OPACIT | Y, RECORD A | LL TIMES IN | MINUTE | S. FOR GA | SES, RECO | ORD ALL TIME | ES IN HOURS | | |
| % Total Excess Emissions = | | Total Duration | n of Excess Er | missione | / (Total One | ratino Time | - CEM Down | time) | | |
| % Total CEM Downtime = | | CEM Downtin | | | | | - 02,111 00,111 | | | |
| | and to the or -et- | | roter ope | | | | | | | |
| NOTES: Actual monitored values are no During excess emission events | | | high anlihanti | | oneestration | in condito | malana anu n | | and the true live | |
| measured data points are not v | | | | | | | | | | |
| for greater detail. | | CONTRACTOR OF THE | And an is then | waii | · · · · tugii cali | Pienou Neg | CONTRACTOR ACTION | . Dee Excess | PHINSTONS GUILLIN | "1 |
| Trans. Mr. made state. An analysis. | | | ···· | | | | | | | |
| | | | | | | | | | | |
| If no exceedances: I certify that the re- | quired analyses certify that I am | | | | | | | | | inces during the reporting |
| SUBMITTED BY: | See certifi | | | | • | 614 143 | • | eoge ine imo ATE: | , 1900-1904 - 1901 - 1901 - 1901 - 1901 - 1901 - 1901 - 1901 - 1901 - 1901 - 1901 - 1901 - 1901 - 1901 - 1901 - | |

CONTINUOUS EMISSION MONITOR EXCESS EMISSION REPORT

| REPORTING QUARTER: | | | Fourth, 20 | 16 | AQDFILE #: #0203 (AI 10 447) | | | |
|----------------------|------------------------------|----------------------------|-----------------------------------|-------------------|--|--|--|--|
| EMISSION UNIT(S): | | | FCC regene | rator | · · · · · · · · · · · · · · · · · · · | | | |
| POLLUTANT MONITORED: | | | CO and O2 | | | | | |
| DATE/TIME | | TOTAL DURATION (HRS) | MAX CONCENTI (ppm), housity | RATION everage | CAUSE/CORRECTIVE ACTION | | | |
| a) Startup/Shuldown | | | Actual | Recaic | | | | |
| 10/1 | 1/2016 10:00 1/2016 13:00 | 3.00 | 1,644 | 1,060 | Please see Incident A in the report summary. | | | |
| Total | - | 3.00 | - | | | | | |
| b) Control equipment | 10/1/2016 1/1/2017 | | No excess em | nissions. | | | | |
| Total | • | 0.00 | - | | | | | |
| c) Process problems | 10/1/2016 1/1/2017 | | No вхсвав еп | niesin#S | | | | |
| Total | | 0.00 | _110 670633 611 | 113310.10. | | | | |
| | 4/2016 23:00 | 4.00 | *** | F47 | Cleans and Indiana B is the second second | | | |
| | /5/2016 0:00 3/2016 22:00 | 1.00 | 762 | | Please see Incident B in the report summary. | | | |
| 12/18 Total | 3/2016 23:00 | 1.00 2.00 | 561 | 380 | Please see Incident H in the report summary. | | | |
| e) Unknown causes | 10/1/2016 | | | | | | | |
| Total | 1/1/2017 | 0.00 | No excess en | nissions. | | | | |
| f) Soot blowing | 10/1/2016 | | | | | | | |
| T-1-1 | 1/1/2017 | 0.00 | No excess en | nissions. | | | | |
| Total | | 0.00 | | | | | | |
| g) Fuel problems | 10/1/2016 1/1/2017 | | No excess en | nissions | | | | |
| Total | """ | 0.00 | 0.0000 611 | | | | | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #. #0203 (AI ID 447) | |
|--|----------------------------|-------------------------|-------------------------------|--|
| EMISSION UNIT(S): | | FCC regenerator | | |
| POLLUTANT MONITORED: | | CO and O2 | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | | |
| a) Monitor malfunction | | | | |
| Total | 0,00 | - | | |
| b) Non-monitor malfunction | | | | |
| Total | 0.00 | _ | | |
| c) QA calibration 12/19/16 12:00 72/19/16 13:00 Total | 1.00 | Quarterly CGA audit. | | |
| d) Other known causes 12/19/2016 0:00 12/19/2016 10:00 | | Communications issue. | | |
| | | | | |
| | | | | |
| | | | | |
| Total | 10.00 | - | | |
| e) Unknown causes Total | 0.00 | | | |

MINNESOTA POLLUTION CONTROL AGENCY

| | | | | | | | | AOD FILE #: | #0203 (AI ID 44 | 7) |
|--|------------------|--------------|----------------|--------------|------------|---|---------------|--|--|---------------------------------------|
| | | | EXCESS E | MISSION A | ND CEM R | EPORTING F | ORM | | | |
| POLLUTANT (circle one): | SO2 | sox | NOx | СО | CO2 | O2 | TRS | H2\$ | HCL | Opacity |
| | Other: | | | | | | | | | |
| DEDOCTIVO OLIMETEO | | | | | MONITOR | | | | | |
| REPORTING QUARTER: | Fourth, 2016 | | | | MODEL: | Advance O | peima (c | TAB UV) C | Gas Analyzer | |
| FACILITY: St. Paul Park Re | efining Co. LLC | | | | MFR: | ABB | | | | |
| SC. PAUL PAIR OF | Elijiing co. DDC | | | | | | | | | |
| EMISSION SUBJECT ITEM: | EQUI2 | | | | | LIMIT AND . i, O2 free | | | | |
| EMISSION SOSTECT ITEM. | 20012 | ··· | | | | | | | ng average | |
| EMICCION UNIT/C) | FCC regenerate | nr | | | EMISSION | DACIC: | | | | |
| EMISSION UNIT(S): | ree regenerati | | | | | Decree Ei | fective | 4/3/06 | | |
| ACCOMMEND WENC. | | . ~ | | | | | | | | |
| ASSOCIATED ITEMS: | EQUI164, TREA | 17 | | | | | | | | |
| PROCESS UNIT DESCRIPTIO | | | a fluidiz | | | | | 1 | | |
| | <u>-</u> | The mate | rials from | the FCC | are rout | ed to the | FCC CO. | lumn for | fractionation. | |
| | | | | | | TOTAL OPE | | OURS | | |
| | | | | | | OF EMISSIC | N UNII: | | 2209 | |
| A. EMISSION DATA SUMMA | RY | | | | B. CEM P | ERFORMAN | ICE SUM N | IARY | | |
| 1 DURATION OF EXCE | SS EMISSIONS (HR | S) | 7 Day | 365 Day | ١, | DURATION | OF CEM D | OWNTIME (| DURING | |
| a) Startup/Shutdown | | , | 0.00 | 0.00 | | SOURCE OF | PERATION | | 30111113 | |
| b) Control equipment | | | 0.00 | 0.00 | | a) Monitor m | | . , | 0.00 | |
| c) Process problems d) Other known cause | | | 0.00 | 0.00 | | b) Non-monic) QA calibra | | tion . | 0.00 | |
| e) Unknown causes | 5 | | 0.00 | 0.00 | -∤ | d) Other kno | | • | 1.00 | |
| f) Soot blowing | | | 0.00 | 0.00 | -1 | e) Unknown | | • | 0.00 | i |
| g) Fuel problems | | | 0.00 | 0.00 | ┥ | 0, 01111101111 | 444500 | • | 0.00 | : |
| 2 TOTAL DURATION (F | (RS) | | 0.00 | 0.00 | ┨╴╸╸ | TOTAL DUR | ATION (HI | RS) | 11.00 | |
| 3 PERCENT OF TOTAL | | | | <u> </u> | | PERCENT (| | , | 11.00 | |
| EXCESS EMISSIONS | | | 0.00% | 0.00 | <u> </u> | CEM DOWN | | | 0.50% | |
| | | | | | <u> </u> | | | | · ·· | · · · · · · · · · · · · · · · · · · · |
| | FOR OPACITY, R | ECORD AL | L TIMES IN N | IINUTES. F | OR GASES | , RECORD / | ALL TIMES | IN HOURS. | | |
| % Total Excess Emissions = | | Total Durati | on of Excess | Emissions / | (Total Ope | ating Time - | CEM Down | ntime) | | |
| N Total CEM Downline - | | EM Dave | time / Total O | neralina Ti- | | | | | | |
| % Total CEM Downtime = | , | PCM DOWIN | uine / Total O | peraung in | ne. | | | | | |
| NOTE: | | | | | | | | | | |
| CEM downtime is | the same downt: | me repor | rted on th | e form f | or EQUI2 | for CO p | om | ······································ | | |
| | | _ | - · · · · | | | | | | <u>. </u> | 1 |
| If no exceedances: I certify that reporting period. I certify that I | | | | | | | | | | edances during the |
| SUBMITTED BY: | See certifica | tion pag | e at front | of repo | ort | | ! | DATE: | | |
| | | | | | | | | | | |

CONTINUOUS EMISSION MONITOR EXCESS EMISSION REPORT

| REPORTING QUARTER: | | Fourth, 2016 | | AQD FILE #: #0203 (AT ID 447) |
|---|----------|----------------------------|-------------------------|-------------------------------|
| EMISSION UNIT(S): | | FCC regenerator | | |
| POLLUTANT MONITORED: | | NOx and O2 | | |
| | TOTAL | MAX. | | |
| | DURATION | CONCENTRATION | | |
| DATE/TIME | (HRS) | (ppm), 7-day rolling avg | CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shutdown | | | | |
| a) Startup/Shutdown | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | | | |
| | | | | |
| b) Control equipment | | | | |
| 10/1/2016 | | No susses autorious | | |
| 1/1/2017 | 0.00 | _ No excess emissions. | | |
| Total | 0.00 | | | |
| . M mechiana | | | | |
| c) Process problems 10/1/2016 | | | | |
| 1/1/2017 _ | | No excess emissions. | | |
| 7/1/2017 Total | 0.00 | _ 140 830855 €1118510185. | | |
| 3 Otal | 0.00 | | | |
| d) Other known causes | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | _ 110 0/10000 011100101101 | | |
| , 0.01 | 0.00 | | | |
| e) Unknown causes | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | | | |
| | | | | |
| f) Soot blowing | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | _No excess emissions. | | |
| Total | 0.00 | | | |
| | | | | |
| g) Fuel problems | | | | |
| 10/1/2016 | | M | | |
| 1/1/2017 | 0.00 | _No excess emissions. | | |
| Total | 0,00 | | | |

CONTINUOUS EMISSION MONITOR EXCESS EMISSION REPORT

| REPORTING QUARTER: | | Fourth, 2016 | * | AQD FILE#: #6 | 0203 (AI ID 447) | |
|------------------------------------|-------------------|---|-------------------------|---------------|------------------|-------------|
| EMISSION UNIT(S): | | FCC regenerator | | | | |
| POLLUTANT MONITORED: | | NOx and O2 | | | | |
| | TOTAL | MAX. | | | | |
| DATE/TIME | DURATION (HRS) | CONCENTRATION (ppm), 365-day roting avg | CAUSE/CORRECTIVE ACTION | | | |
| a) Startup/Shutdown | (HRS) | (phili, 303-02) lossig avg | CAUSE/CORRECTIVE ACTION | | | |
| a) Startup/Shutdown | | | | | | |
| 10/1/2016 | | | | | | |
| 1/1/2017 | | No excess emissions. | | | | |
| Total | 0.00 | | | | | |
| b) Control equipment | | | | | | |
| 10/1/2016 | | | | | | |
| 1/1/2017 | | No excess emissions. | | | | |
| Total | 0.00 | | | | | |
| c) Process problems | | | | | | |
| 10/1/2016 | | | | | | |
| 1/1/2017 | | No excess emissions. | | | • | |
| Total | 0.00 | - | | | | |
| | | | | | | |
| d) Other known causes 10/1/2016 | | | | | | |
| 1/1/2017 | | No excess emissions. | | | | |
| Total | 0,00 | | | | | |
| | | | | | | |
| e) Unknown causes | | | | | | |
| 10/1/2016 1/1/2017 | | No excess emissions, | | | | |
| Total | 0.00 | _ 140 0x0035 8111531013, | | | | |
| | 5.00 | | | | | |
| f) Soot blowing | | | | | | |
| 10/1/2016 | | | | | | |
| 1/1/2017 Total | 0.00 | _ No excess emissions. | | | | |
| I CIAI | 0.00 | | | | | |
| g) Fuel problems | | | | | | |
| 10/1/2016 | | | | | | |
| 1/1/2017 | | _ No excess emissions. | | | | |
| | | | | | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|----------------------------|----------------------------|--------------------------|-------------------------------|
| EMISSION UNIT(S): | | FCC regenerator | |
| POLLUTANT MONITORED: | | NOx and O2 | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | |
| | | | |
| | | | |
| a) Monitor malfunctio⊓ | <i>į</i> . | • | |
| Total | 0.00 | See FCC CO CEM downtime. | |
| b) Non-monitor matrunction | | | |
| | | | |
| Total | 0.00 | See FCC CO CEM downtime. | |
| c) QA calibration | | | |
| Total · | 1.00 | See FCC CO CEM downtime. | |
| d) Other known causes | | | |
| | | | |
| Total | 10,00 | See FCC CO CEM downtime. | |
| e) Unknown causes | | 9.V. 1. 1 | |
| Total | 0.00 | See FCC CO CEM downtime. | |

AQD FILE#: #0203 (AI ID 447)

| | | EXCESS | EMISSIO | N AND CEM | REPORTIN | IG FORM | | | | |
|---------------------------------------|-----------------------|----------------|-------------|-----------------------|---------------|----------------------|--------------|----------------|-----------------|---------------|
| POLLUTANT (circle one): | <u>\$02</u> | sox | NOx | co | CO2 | O 2 | TRS | H2S | HCL | Opacity |
| | Other: | | | | | | | | | |
| DECORPHIC CHAPTED. | | | | - | MONITOR | | | | | |
| REPORTING QUARTER: | Fourth, 2016 | | | • | MODEL: | Advance (| Optima (L | imas UV) | Gas Analyzei | <u> </u> |
| FACILITY: | | | | | MFR: | ABB | | | | |
| St. Paul Park Refi | ning Co. LLC | | | | | | | | | |
| _ | | | | • | EMISSION | LIMIT AND | AVERAGE | TIME- | | |
| EMISSION SUBJECT ITEM: | EQUI2 | | | | | /d, 02 fre | | | average | |
| | | | ~ | • | | . O2 free | | | | |
| FARCON UNITO | FCC regenerat | - 0.5 | | | CMICOLON | L D A CIC. | | | | |
| EMISSION UNIT(S): | rcc regenerat | .01 | | | EMISSION | NBASIS: Decree Ef | fective 6 | /30/06 | | |
| | | | | | COMBETTE | Decree Er | TECTIVE C | 730708 | | |
| ASSOCIATED ITEMS: | EQUI164, TREA | 17 | | | | | | | | |
| DOCATE A LIMIT DECORDISTION | | | | | | | | | | |
| PROCESS UNIT DESCRIPTION: | | EQUI2 is a | | | | | PCC colum | n for fra | ectionation. | - |
| | • | THE MACELL | als Ilou | the FCC | are route | to co the | PCC COIU | ul tor tra | ectonacion. | |
| | | | | | | TOTAL OP | ERATING H | OURS | | |
| | | | | | | OF EMISSI | ON UNIT: | | 2209 | |
| A. EMISSION DATA SUMMARY | | | | | Te ceu o | ERFORMAN | CC CIMIL | nv. | | |
| A. EMISSION DATA SOMMART | | | | | B. CEM F | EKFORWAN | CE SUMMIP | W.1 | | |
| 1 DURATION OF EXCESS | EMISSIONS (HRS | 5) | 7 Day | 365 Day | 1 | DURATION | OF CEM D | OWNTIME (| DURING | |
| a) Startup/Shutdown | | | 0.00 | 0.00 | _[| SOURCE C | PERATION | (HRS) | | |
| b) Control equipment | | | 0.00 | 0.00 | _ | a) Monitor r | | | 0.00 | |
| c) Process problems | | | 0.00 | 0.00 | | b) Non-mor | | tion | 0.00 | |
| d) Other known causes | | | 0.00 | 0.00 | ╛ | c) QA calibi | | | 1.00 | |
| e) Unknown causes | | | 0.00 | 0,00 | | d) Other kn | own causes | | 10.00 | İ |
| f) Soot blowing | | | 0.00 | 0.00 | | e) Unknowr | causes | | 0.00 | |
| g) Fuel problems | | | 0.00 | 0.00 | 7 | | | | | |
| 2 TOTAL DURATION (HRS | 5) | | 0.00 | 0.00 | 7 2 | TOTAL DU | RATION (HE | RS) | 11.00 | |
| 3 PERCENT OF TOTAL | , | | | - | | PERCENT | | | | |
| EXCESS EMISSIONS | | | 0.00% | 0.00% | _ | CEM DOW | | | 0.50% | |
| | | | | | | | | | | - |
| | FOR OPACITY, F | RECORD ALL | TIMES IN | MINUTES. I | FOR GASES | S, RECORD A | ALL TIMES | IN HOURS. | | |
| % Total Excess Emissions = | | Total Duration | of Excess | Emissions / | (Total Open | ating Time - C | CEM Downti | me) | | |
| or Total Origin Downstone o | | OEM David | / Take | anntine Ti | | | | | | |
| % Total CEM Downtime = | | CEM Downtim | e / Ioual O | betating item | ie | | | | | |
| NOTE: | . | | | | | | | | | |
| CEM downtime is the | same downtim | s reported | on the | form for | ROUTS for | CO nnm | | ·· | | |
| Part Annual TR PH | 20721210 | - roported | | | -40-1-101 | CC DDM | | | | |
| If no exceedances: I certify that the | a motificad analyses | uere made + | at Lam for | miliar with the | n raculte as | d that to the | hact of mirk | nauladza +- | ara wara no awa | andanone |
| it no exceedances. I certify that the | o todalica sitaliyses | wele illang, n | ieri em 181 | inner wir (19 | e iesuits, an | u ulai io ine | nest of my k | រ សេសគេពជិត បេ | ere wele no exc | eevances |
| SUBMITTED BY: | See certifica | tion page | at front | of repor | t | | | DATE: | | |

| REPORTING QUARTER: | | Fourth, 2016 | | AQD FILE #: #0203 (AI ID 447) |
|--|-----------------------------|---|-------------------------|-------------------------------|
| EMISSION UNIT(S): | | FCC regenerator | | |
| POLLUTANT MONITORED: | | SO2 ppmvd, O2 fre | e | |
| DATE/TIME | TOTAL DURATION (days) | MAX. CONCENTRATION (ppm), 7-day average | CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shutdown 10/1/2016 1/1/2017 _ | | _ No excess emissions, | | |
| Total | 0.00 | | | |
| b) Control equipment 10/1/2016 1/1/2017 _ Total | 0.00 | _ No excess emissions. | | |
| TOTAL | 0.00 | | | |
| c) Process problems 10/1/2016 1/1/2017 _ Total | 0.00 | _ No excess emissions. | | |
| d) Other known causes 10/1/2016 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | _ | | |
| e) Unknown causes 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | | |
| f) Soot blowing 10/1/2016 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | | | |
| g) Fuel problems 10/1/2016 1/1/2017 | | _No excess emissions. | | |
| Total | 0.00 | | | |

| REPORTING QUARTER: | | Fourth, 2016 | 7.1=04 ······· | AQD FILE#: #0203 (AI ID 447) |
|--|----------------------------|---|-------------------------|------------------------------|
| EMISSION UNIT(S): | | FCC regenerator | | |
| POLLUTANT MONITORED: | | SO2 ppmvd, O2 fre | e | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCENTRATION (ppm), 365-day average | CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | _ | | |
| b) Control equipment 10/1/2016 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | - | | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0.00 | _ No excess emissions. | | |
| e) Unknown causes 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | | |
| f) Soot blowing 10/1/2018 1/1/2017 _ Total | 0.00 | _ No excess emissions. | | |
| g) Fu el problems 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | | |

| REPORTING QUARTER: | | Fourth, 2016 | <u> </u> | AQD FILE#: #02 | 03 (AI ID 447) | |
|-----------------------------|----------------------------|----------------------------|---------------------|----------------|----------------|--|
| EMISSION UNIT(S): | | FCC regenerator | | | | |
| POLLUTANT MONITORED: | | SO2 ppmvd, O2 free | | | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | | | | |
| NOTE: CEM downtime is th | e same downti | me reported on the form fo | or BQUI2 for CO ppm | | | |
| a) Monitor malfunction | 0.00 | See FCC CO CEM downtime. | | | | |
| b) Non-monitor malfunction | | | | | | |
| Total | 0.00 | See FCC CO CEM downtime. | | | | |
| c) QA calibration | 1.00 | See FCC CO CEM downtime. | d - Me - | , | | |
| d) Other known causes | | | | | | |
| Total | 10.00 | See FCC CO CEM downtime. | | | | |
| e)¡Unknown;causes | 0.00 | See FCC CO CEM downtime. | | ·- | | |

AQD FILE #: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): SO2 | SOX NOx | CO CO2 O2 TRS H2S HCL Opacity |
|--|--|--|
| Other: | | |
| | | MONITOR |
| REPORTING QUARTER: Fourth, 2016 | | MODEL: Advance Optima (Limas UV) Gas Analyzer |
| FACILITY: | | MFR: ABB |
| St. Paul Park Refining Co. LL | <u>: </u> | |
| | | |
| THEOREM ON THE PROPERTY AND ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AN | | EMISSION LIMIT AND AVERAGE TIME: |
| EMISSION SUBJECT ITEM: EQUI2 | | 793.65 lbs/hr - 3 hour rolling average |
| FINOSION UNITARIA POR ASSESSADA | _ | #1.V00.00 \ |
| EMISSION UNIT(S): PCC regenerato | | EMISSION BASIS: SIP for SO2 NAAQS |
| ASSOCIATED ITEMS: EQUI164, TREAT | 7 | |
| | | |
| | | catalytic cracking unit. |
| The | materials from th | ne FCC are routed to the FCC column for fractionation. |
| | | TOTAL OPERATING HOURS |
| | | OF EMISSION UNIT: 2209 |
| | | |
| A. EMISSION DATA SUMMARY | | B. CEM PERFORMANCE SUMMARY |
| | | |
| 1 DURATION OF EXCESS EMISSIONS (H | RS) | 1 DURATION OF CEM DOWNTIME DURING |
| a) Startup/Shutdown | 0.00 | SOURCE OPERATION (HRS) |
| b) Control equipment | 0.00 | a) Monitor malfunction 0.00 |
| c) Process problems | 0.00 | b) Non-monitor malfunction 0.00 |
| d) Other known causes | 0.00 | c) QA calibration 1.00 |
| e) Unknown causes | 0.00 | d) Other known causes 10.00 |
| f) Scot blowing | 0.00 | e) Unknown causes 0.00 |
| g) Fuel problems | 0.00 | |
| 2 TOTAL DURATION (HRS) | 0.00 | 2 TOTAL DURATION (HRS) 11.00 |
| 3 PERCENT OF TOTAL | | 3 PERCENT OF TOTAL |
| EXCESS EMISSIONS | 0.00% | CEM DOWNTIME 0.50% |
| FOR OPACITY, REG | CORD ALL TIMES IN MIN | IUTES. FOR GASES, RECORD ALL TIMES IN HOURS. |
| % Total Excess Emissions = Total | at Duration of Excess Emi | issions / (Total Operating Time - CEM Downtime) |
| | / Downtime / Total Opera | · · · · · · · · · · · · · · · · · · · |
| 77 1001 021 2011 1110 | | |
| NOTE: | - | |
| CEM downtime is the same downt | ime reported on th | ne form for EQUI2 for CO ppm |
| | | |
| there were no exceedances during the reporting p | | n familiar with the results, and that to the best of my knowledge amiliar with the information in this report and that to the best of align is valid |
| | on page at front o | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AT ID 447) |
|---|----------------------------|-----------------------------|-------------------------------|
| EMISSION UNIT(S): | | FCC regenerator | |
| POLLUTANT MONITORED: | | S02 | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCENTRATION (lbs/hr) | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | _ | |
| Total - | 0.00 | - | |
| b) Control equipment 10/1/2016 1/1/2017 | | _ | |
| Total | 0.00 | | |
| c) Process problems 10/1/2016 1/1/2017 | | | |
| Total | 0.00 | - | |
| d) Other known causes 10/1/2016 1/1/2017 _ Total | 0.00 | _ | |
| | 0,00 | | |
| e) Unknown causes 10/1/2016 1/1/2017 | | _ | |
| Total | 0.00 | - | |
| f) Soot blowing 10/1/2016 1/1/2017 _ Total | 0.00 | - | |
| g) Fuel problems 10/1/2016 1/1/2017 | | | |
| Total | 0.00 | _ | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE#: #0203 (AI ID 447) |
|----------------------------|----------------------------|--------------------------------|------------------------------|
| EMISSION UNIT(S): | | FCC regenerator | |
| POLLUTANT MONITORED: | | \$02 | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | |
| NOTE: CEM downtime is | the same d | owntime reported on the form f | or EQUI2 for CO ppm |
| a) Monitor malfunction | - "0/00 | See FCC SO2 ppm CEM downtime. | ·. · |
| b) Non-monitor matfunction | | | |
| Total | 0.00 | See FCC SO2 ppm CEM downtime. | |
| c) QA calibration Total | 1:00 | See FCC SO2 ppm CEM downtime. | |
| d) Other known causes | | | |
| Total | 10.00 | See FCC SO2 ppm CEM downtime. | |
| e) Unknown causes Total | 0.00 | See FCC SO2 ppm CEM downtime. | |

AQD FILE#: #0203 (AI ID 447) EXCESS EMISSION AND CEM REPORTING FORM \$02 SOX NOv POLLUTANT (circle one): CO (02) HCI. CO2 TRS H₂S Opacity Other: MONITOR REPORTING QUARTER: Fourth, 2016 MODEL: Advance Optima (Limas UV) Gas Analyzer MFR: ABB FACILITY: St. Paul Park Refining Co. LLC EMISSION LIMIT AND AVERAGE TIME: EMISSION SUBJECT ITEM: EQUI2 9.8 lb SOx/1000 lb coke burn - 7 day rolling avg **EMISSION BASIS:** FCC regenerator EMISSION UNIT(S): Consent Decree, Appendix I, and NSPS 60.104(b)(2), 60.104(c) ASSOCIATED ITEMS: EQUI164, TREA17 PROCESS UNIT DESCRIPTION: EQUI2 is a fluidized catalytic cracking unit. The materials from the FCC are routed to the FCC column for fractionation. TOTAL OPERATING HOURS OF EMISSION UNIT: 2209 A. EMISSION DATA SUMMARY B. CEM PERFORMANCE SUMMARY 1 DURATION OF EXCESS EMISSIONS (HRS) 1 DURATION OF CEM DOWNTIME DURING a) Startup/Shutdown SOURCE OPERATION (HRS) 0.00 b) Control equipment a) Monitor malfunction 0.00 0.00 c) Process problems 0.00 b) Non-monitor malfunction 0.00 d) Other known causes c) QA calibration 0.00 1.00 e) Unknown causes d) Other known causes 0.00 10.00 f) Soot blowing 0.00 e) Unknown causes 0.00 g) Fuel problems 0.00 2 TOTAL DURATION (HRS) 2 TOTAL DURATION (HRS) 0.00 11.00 3 PERCENT OF TOTAL 3 PERCENT OF TOTAL **EXCESS EMISSIONS** 0.00% CEM DOWNTIME 0.50% FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. % Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) % Total CEM Downlime = CEM Downtime / Total Operating Time NOTE: CEM downtime is the same downtime reported on the form for EQUI2 for CO ppm If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during the reporting period. I certify that I am familiar with the information in this report and that to the best of my knowledge the information is valid. See certification page at front of report SUBMITTED BY:

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE#: #0203 (AI ID 447) |
|-------------------------------------|----------------------------|------------------------------|------------------------------|
| EMISSION UNIT(S): | | FCC regenerator | |
| POLLUTANT MONITORED: | | Lb SOX | |
| 0.4750045 | TOTAL DURATION (HRS) | MAX. CONCENTRATION | |
| a) Startup/Shutdown | (nka) | (Ib Sox/ton), hourly average | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shuldown 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| b) Control equipment | | | |
| 10/1/2016 | | | |
| 1/1/2017_ | | _No excess emissions. | |
| Total | 0.00 | | |
| c) Process problems 10/1/2016 | | | |
| 1/1/2017_ | | _ No excess emissions. | |
| Total | 0.00 | | |
| d) Other known causes 10/1/2016 | | | |
| 1/1/2017_ | | No excess emissions. | |
| Total | 0.00 | | |
| e) Unknown causes | | | |
| 10/1/2016 1/1/2017 | | No excess emissions. | |
| 7/1/201/ _ Total | 0.00 | _ 140 excess emissions. | |
| 100 | **** | | |
| f) Soot blowing | | | |
| 10/1/2016 | | | |
| 1/1/2017 | 2.00 | _No excess emissions. | i |
| Total | 0.00 | | |
| g) Fuel problems | | | |
| 10/1/201 6 1/1/2017 _ | | No excess emissions. | |
| Total | 0.00 | _ | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 | (AI ID 447) |
|---|----------------------------|---------------------------------|------------------------|---------------------------------------|
| EMISSION UNIT(S): | | FCC regenerator | | |
| POLLUTANT MONITORED: | | Lb SOX | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | | |
| NOTE: CEM downtime is | the same | downtime reported on the for | m for EQUI2 for CO ppm | |
| a) Monitor malfunction Total b) Non-monitor malfunction | 0.00 | See FCC NOx or CO CEM downtime. | | |
| _ | | - | | |
| Total | 0.00 | See FCC Nox or CO CEM downtime. | | |
| c) QA calibration Total | 1.00 | See FCC NOx or CO CEM downtime. | | · · · · · · · · · · · · · · · · · · · |
| d) Other known causes | | | | |
| Total | 10.00 | See FCC Nox or CO CEM downtime. | | |
| e) Unknown causes Total | 0.00 | See FCC NOx or CO CEM downtime. | * | |

AQD FILE#: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | \$02 | NOx | co | CO2 | 02 | TRS | H2S | HCL | Opacity | |
|--|----------------|---------------|------------------|------------------|--------------|--------------|-------------|---------------------------|-------------|-----------|
| | Other. | Plow | | | | | | | | |
| | | | | | MONITO | R | | | | |
| REPORTING QUARTER: | Fourth, 20 | 1.6 | | | MODEL: | Fuel Gas | Flow F | Rate/FG H2S | CEM | |
| FACILITY: | | | | | MFR: | | | | | |
| St. Paul Park Refi | ning Co. LLC | | | | , | | - | | | |
| <u> </u> | | | | | | | | | | |
| EMILEN ON BUILDING | | | | | | | | RAGING TIME | | |
| EMISSION SUBJECT ITEM: | EÓN13 | | | | | | | our rolling hour rolli | | |
| | | | | | 0.30 11 | 3 302/11814 | <u> </u> | HOUL LOLLI | ing average | |
| EMISSION UNIT(S): | No. 2 Crude | Vacuum H | eater | | EMISSIC | N BASIS: | | SIP for \$ | O2 NAAQS | |
| | 5-B-1 | | | | | | | <u> </u> | | |
| AGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG | | | | | | | | | | |
| ASSOCIATED ITEMS: | COMG7, COM | 320, EQUI1 | 63, EQUI175, | EQUIZOS, | STRU70, | COMG20 | | | | |
| | | | | | TOTAL O | PERATING | 3 HOURS | Total | Fuel Gas | Fuel Oil |
| | | | | | | SION UNI | | 1751 | 1751 | 0 |
| | | | | | | | | | | |
| A. EMISSION DATA SUMMARY | | | | | B. CEM | PERFORM | ANCE SU | IMMARY | | |
| A DUDATION OF EVOESS | EMICCIONE (H | 1001 | 11-21- | He fore on his . | 1 . | DUD.4710 | N 05 051 | 4.00.47.17.46 | CHIDING | |
| 1 DURATION OF EXCESS a) Startup/Shutdown | EM1991049 (L | ino) | lb/hr 0 . 00 | lb/mmbtu 0.00 | 1 1 | | | M DOWNTIME ION (HRS) | Fuel Gas | Fuel Oil |
| b) Control equipment | | • | 0.00 | 0.00 | i | a) Monitor | | | 0.00 | 0.00 |
| c) Process problems | | _ | 0.00 | 0.00 | 1 | b) Non-mo | | | 0.00 | 0.00 |
| d) Other known causes | | | 0.00 | 0.00 |] | c) QA calib | oration | | 0.00 | 0.00 |
| e) Unknown causes | | _ | 0.00 | 0.00 | _[| d) Other k | nown cau | ses | 0,00 | 0.00 |
| f) Soot blowing | | | 0.00 | 0.00 | 4 | e) Unknow | m causes | | 0.00 | 0.00 |
| g) Fuel problems 2 TOTAL DURATION (HRS | 21 | • | 0.00 | 0.00 | ٠, | TOTAL DI | ID ATION | (UDC) | | |
| 3 PERCENT OF TOTAL | •) | - | 0.00 | 0.00 | - | PERCENT | | | 0,00 | 0.00 |
| EXCESS EMISSIONS | | | 0.00% | 0.00% | 3 | CEM DOV | | AL | 0.00% | 0.00% |
| | | - | | | 7 | 02111, 201 | *********** | | 0.500 | 0.001 |
| | FOR OPACIT | r, RECORD A | ALL TIMES IN N | MINUTES. FO | R GASES, | , RECORD | ALL TIME | ES IN HOURS | | |
| | | ··· · | | - | | | | | | |
| % Total Excess Emissions = | | Total Duratio | n of Excess Em | issions / (Tota | i Operating | Time - CE | M Downti | me) | | |
| % Total CEM Downtime = | | CEM Downtis | me / Total Opera | ating Time | | | | | | |
| NOTES: There was zero fue. | l oil runtim | e during t | he quarter. | | | _ | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | _ _ | | | | | | | | V | |
| | | | | | | | | | | |
| If no exceedances: I certify that the | | | | | | | | | | ceedances |
| during the reporting period. I certif | | | | · = ' | at to the be | sat or my kn | iowiedge 1 | | IS Valid. | |
| SUBMITTED BY: | ace derulti | carron ba | ge at front | or report | | | , | DATE: | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE# #0203 (AI ID 447) |
|-----------------------|-------------------|---|-----------------------------|
| EMISSION UNIT(S): | | 5-B-1 | |
| POLLUTANT MONITORED: | | SO2 lb/hr - 3 hour rolling average | |
| | TOTAL DURATION | | |
| DATE/TIME | (HRS) | MAX. EMISSIONS RATE CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shutdown | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| b) Control equipment | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total . | 0.00 | _ | |
| c) Process problems | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | _ | |
| d) Other known causes | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | _ | |
| e) Unknown causes | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | _ | |
| f) Soot blowing | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | - | |
| g) Fuel problems | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| · Total | 0.00 | - | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|----------------------------------|----------------------------|---|-------------------------------|
| EMISSION UNIT(S): | | 5-B-1 | |
| POLLUTANT MONITORED: | | SO2 lb/mmbtu - 3 hour rolling average | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. EMISSIONS RATE CAUSE/CORRECTIVE ACTION | |
| a) Cladus/Churden | | | |
| a) Startup/Shutdown 10/1/2016 | | • | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| b) Control equipment | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | _ | |
| c) Process problems 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| d) Other known causes | | | |
| 10/1/2016 | | | |
| 1/1/2017 _. Total | 0.00 | _No excess emissions. | |
| | 0.00 | | |
| e) Unknown causes | | | |
| 10/1/2016 | | | |
| 1/1/2017 Total | 0.00 | _No excess emissions. | |
| 1 Dran | 0.00 | | |
| f) Soot blowing | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | _ | |
| g) Fuel problems | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | _ No excess emissions. | |
| Total | 0.00 | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: | #0203 (AI ID 447) |
|----------------------------|----------------------------|----------------------------|-------------|--|
| EMISSION UNIT(S): | | 5-B-1, fuel gas flow meter | | |
| POLLUTANT MONITORED: | | S02 | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | | |
| a) Monitor malfunction | 0:00 | | | |
| b) Non-monitor malfunction | | | | |
| Total | 0.00 | - | | |
| c) QA calibration Total | 0.00 | | | |
| d) Other known causes | | | | |
| Total | 0.00 | - | | |
| e) Unknown causes | 0.00 | | | of the second se |

| REPORTING QUARTER: | Fourth, 2016 | AQD FILE#. | #0203 (AI ID 447) |
|--------------------------------------|-------------------------|------------|-------------------|
| EMISSION UNIT(S): | Heater 5-B-1 | | |
| POLLUTANT MONITORED: | Puel Oil Flow Rate | | |
| TOTAL DURATION DATE/TIME (HRS) | CAUSE/CORRECTIVE ACTION | | |
| a) Monitor malfunction Total 0:00 | | | |
| b) Non-monitor malfunction | | | |
| Total 0.00 | _ | | |
| c) QA calibration | | | |
| d) Other known causes | | | |
| Total 0.00 | _ | | |
| e) Unknown causes | | | |

AQD FILE#: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 NOx CO CO2 Other: | 2 O2 TRS H2S HCL Opacity |
|---|--|--|
| REPORTING QUARTER: | Fourth, 2016 | MONITOR MODEL: Advance Optima Limas 11 MFR: ABB |
| FACILITY: | | 1011 14. |
| St. Paul Park Refi | ning Co. LLC | |
| | | EMISSION LIMIT AND AVERAGE TIME: |
| | | 0.05 lbs/mmbtu - 12 month rolling average |
| EMISSION SUBJECT ITEM: | EQUI4 | 0.14 lbs/mmbtu - 3 hour rolling average |
| | | EMISSION BASIS: |
| EMISSION UNIT(S): | Heater 2-B-3 | BACT PSD, 40CFR 52.21, Minn. R. 7007.3000 |
| ASSOCIATED ITEMS: | COMG7, EQUI163, EQUI176, EQUI296, | TOTAL OPERATING HOURS OF EMISSION UNIT: 1753 |
| A. EMISSION DATA SUMMAR | | B. CEM PERFORMANCE SUMMARY |
| a) Startup/Shutdown b) Control equipment c) Process problems d) Other known causes e) Unknown causes f) Soot blowing g) Fuel problems 2 TOTAL DURATION (HR: 3 PERCENT OF TOTAL EXCESS EMISSIONS | S EMISSIONS (HRS) 12 mo 3 hr 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 | 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HRS) a) Monitor malfunction 0.00 b) Non-monitor malfunction 0.00 c) QA calibration 2.00 d) Other known causes 3.00 e) Unknown causes 0.00 2 TOTAL DURATION (HRS) 5.00 3 PERCENT OF TOTAL CEM DOWNTIME 0.29% INUTES. FOR GASES, RECORD ALL TIMES IN HOURS. |
| | | |
| % Total Excess Emissions = | Total Duration of Excess Emis | ssions / (Total Operating Time - CEM Downtime) |
| % Total CEM Downtime = | CEM Downtime / Total Opera | ting Time |
| NOTES: | | |
| | | |
| | | |
| | | amiliar with the results, and that to the best of my knowledge there were e information in this report and that to the best of my knowledge the |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|---|----------|---------------------------|-------------------------------|
| EMISSION UNIT(S): | | Heater 2-B-3 | |
| POLLUTANT MONITORED: | | NOx lb/mmbtu (12 | month rolling avg) and 02 |
| DATE/TIME | DURATION | CONCENTRATION | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown 10/1/201 1/1/201 | | No excess emissions. | |
| Total | 0.00 | • | |
| b) Control equipment 10/1/201 1/1/201 | 16 17 | No excess emissions. | |
| Total | 0.00 | | |
| c) Process problems 10/1/201 1/1/201 | | No excess emissions. | |
| Total | 0.00 | 110 excess citisaloris. | |
| d) Other known causes 10/1/201 1/1/201 Total | | _No excess emissions. | |
| e) Unknown causes 10/1/201 1/1/201 Total | | _No excess emissions. | |
| f) Soot blowing 10/1/201 1/1/201 Total | | , No excess emissions. | |
| g) Fuel problems 10/1/201 1/1/201 Total | | _No excess emissions. | |

| REPO | RTING QUARTER: | | Fourth, 2016 | | AQD FILE # #0203 (AI ID 447) | |
|-------|--|----------------------------|--------------------------------------|---------------------|------------------------------|--|
| EMISS | SION UNIT(S): | | Heater 2-B-3 | | <u>-</u> | |
| POLL | JTANT MONITORED: | | NOx 1b/mmbtu (3 1 | ar rolling avg) and | 92 | |
| | DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCENTRATION (lbs/mmblu) | CAUSE/CORRECTIVE | ACTION | |
| a) | Startup/Shutdown 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | | |
| b) | Control equipment 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | | |
| c) | Process problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | | |
| d) | Other known causes 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | | | |
| e) | Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | | |
| ŋ | Soot blowing 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | | |
| g) | Fuel problems 10/1/2016 1/1/2017 | 0.00 | _No excess emissions. | | | |

| REPORTING QUARTER: | | Fourth, 2016 AQD FiLE #: #020 | 3 (AI ID 447) |
|---|------------------|----------------------------------|---------------|
| EMISSION UNIT(S): | | Heater 2-B-3 | |
| POLLUTANT MONITORED: | | NOx and O2 | |
| DATE/TIME | TOTAL | CAUSE/CORRECTIVE ACTION | |
| a) Monitor malfunction | 3.0100 - 0100 | | |
| b) Non-monitor malfunction | | | |
| Total | 0.00 | - | |
| c) QA(calibration): 2 1177/2016 13:00 4 1177/2016 15:00 | 2.00. 2.00 | Quarterly calibration gas audit. | |
| d) Other known causes 12/14/2016 12:00 12/14/2016 15:00 | 3.00 | Preventive maintenance. | |
| | 3.00 | <u>.</u> | |
| e);Unknown;causes+ | 0.00 | | |

AQD FILE #: #0203 (AT ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 | NOx | co | CO2 | 02 | TRS | H2S | HCL | Opacity | |
|---|-----------------|----------------|----------------|------------------------|--------------------|---------------|---------------|---------------|---------------|----------------|
| | Other: | Flow | | | | | | | | |
| | | | | | MONITO |)R | | | | |
| REPORTING QUARTER: | Fourth, 2 | 016 | | _ | MODEL: | Fuel Gas | Flow Rat | e/FG H2S C | EM | |
| FACILITY: | | | | | MFR: | | | | | |
| St. Paul Park R | efining Co. | LLC | | _ | | | | | | · - |
| | _ | | | _ | | | | | | |
| | | | | | EMISSIO | ON LIMITS A | ND AVERA | GING TIME: | | |
| EMISSION SUBJECT ITEM: | EQUI4 | | | _ | | 34.0 lb | S02/hr - | 3 hour rol | ling averag | <u></u> |
| | | | | | | 0.2834 1 | b SO2/mmb | tu - 3 hou | r rolling a | verage |
| EMICOION HINTON | No 2 Cruy | de Charge H | lostor | | EMICOIC | NI 04010. | | | | |
| EMISSION UNIT(S): | | ae Charge r | leater | _ | EMISSIC | ON BASIS: | | SIP for S | 02 NAAQS | |
| | 2-B-3 | | | _ | | | | | | |
| ASSOCIATED ITEMS: | COMG7. FOI | III63. FOIII | 176, EQUI2 | 96 97 | ב ווזפי | | | | | |
| ACCOUNTED ITEMIO. | COMOT, EQ | 01103, BQ01 | ITTO, DOULE | <i>7</i> 0, <i>3</i> 1 | , KOIJ | | | | | |
| | | | | | OPERA | TING HOUR | S OF EMISS | SION UNIT: | | |
| | | | | | | | | Total | Fuel Gas | Natural Gas |
| | | | | | | | | 1753 | 1753 | 1753 |
| | | | | | | | | | | |
| A. EMISSION DATA SUMMA | RY | | | | B. CEM | PERFORMA | NCE SUM | MARY | | |
| 1 DURATION OF EXC | ESS EMISSIO | NS (HRS) | | | 1 | DURATION | OF CEM D | DOWNTIME D | URING | |
| | | lb/hr | lb/mmbtu | | 1 | SOURCE | OPERATION | N (HRS) | | |
| a) Startup/Shutdow∩ | | 0.00 | 0.00 | _ | | | | | Fuel Gas | Natural Gas |
| b) Control equipment | t | 0.00 | 0.00 | _ | | a) Monitor | malfunction | | 0.00 | 0.00 |
| c) Process problems | | 0.00 | 0.00 | _ | | b) Non-moi | nitor malfund | ction | 0.00 | 0.00 |
| d) Other known caus | es | 0.00 | 0.00 | _ | | c) QA calib | ration | | 0.00 | 0.00 |
| e) Unknown causes | | 0.00 | 0.00 | _ | | d) Other kn | own causes | ; | 0.00 | 0.00 |
| f) Soot blowing | | 0.00 | 0.00 | _ | l | e) Unknow | n causes | | 0.00 | 0.00 |
| g) Fuel problems | | 0.00 | 0.00 | _ | i | | | | | |
| 2 TOTAL DURATION | | 0.00 | 0.00 | | | | RATION (H | • | 0.00 | 0.00 |
| 3 PERCENT OF TOTAL | | | | | 3 PERCENT OF TOTAL | | | | | |
| EXCESS EMISSION | S | 0.00% | 0.00% | - | | CEM DOW | NTIME | | 0.00% | 0.00% |
| | | <u> </u> | | | <u> </u> | | | | | |
| | FOR OPACE | TY, RECORD | ALL TIMES IN | I MINUT | ES. FOR | R GASES, R | ECORD ALI | L TIMES IN H | OURS. | |
| *************************************** | | | | | | | | | | |
| % Total Excess Emissions = | | Total Duration | ол of Excess E | mission | s / (Total | Operating T | îme - CEM l | Downtime) | | |
| % Total CEM Downtime = | | CEM Downt | ime / Total Op | erating ' | Time | | | | | |
| NOTES: | | | | - | | | | | | |
| HOTES. | | | | | | | | | | |
| | | | | | | | | | | |
| | | - | <u> </u> | | | ••• | •••• | | | |
| | | | | | | | | | | |
| If no exceedances: I certify the | at the required | analyses were | made, that I a | ım famil | iar with th | e results, an | d that to the | best of my kr | owledge there | were no |
| exceedances during the repor | | | | | | | | | | |
| valid. | | | | | | | | | | |
| SUBMITTED BY: | See certif | fication pa | ge at fron | tofi | eport | | | DATE: | | |

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| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AT ID 447) |
|-----------------------|-------------------|----------------------|-------------------------------|
| EMISSION UNIT(S): | | 2-B-3 | <u> </u> |
| POLLUTANT MONITORED: | | SO2 lb/mmbtu - 3 hou | ir rolling average |
| | TOTAL DURATION | | |
| DATE/TIME | (HRS) | MAX. EMISSIONS RATE | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| b) Control equipment | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| c) Process problems | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | - | |
| d) Other known causes | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions, | |
| Total | 0,00 | _ | |
| e) Unknown causes | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | • | |
| f) Soot blowing | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | - | |
| g) Fuel problems | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | - | |

| REPORTING QUARTER: | | Fourth, 2016 | _ | AQD FILE # #0203 (A) | I ID 447) |
|----------------------------|--|---------------------------|--------------|----------------------|-----------|
| EMISSION UNIT(S): | | 2-B-3, Fuel Gas Flow Rate | <u> </u> | | |
| POLLUTANT MONITORED: | | \$02 | - | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | | | |
| a) Monitor malfunction | 20:00 | | | | |
| b) Non-monitor malfunction | | | | | |
| Total | 0.00 | - | | | |
| c)(QA)calibrations | *0:00 | | | | |
| d) Other known causes | | | | | |
| Total | 0.00 | - | | | |
| e).Unknown,causes | ************************************** | | | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: _1 | 0203 (AI ID 447) |
|----------------------------|----------------------------|------------------------------|----------------|------------------|
| EMISSION UNIT(S): | | 2-B-3, Natural Gas Flow Rate | | |
| POLLUTANT MONITORED: | | 502 | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | | |
| a) Monitor malfunction | # 0:00 | | | |
| b) Non-monitor malfunction | | • | | |
| Total | 0.00 | | | |
| c) OA calibration | 0:00 | | | |
| d) Other known causes | | | | |
| Total | 0.00 | | | |
| e) Unknown causes | F-10 ¹ 00) | | | |

AQD FILE#: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 | NOx | CO | CO2 | Q2 | TRS | H2S | HCL | Opacity | |
|--|----------------------|------------------|-------------------|----------|-----------------------------------|-----------|---------------|-------------|---|--|
| | Other: | Flow | | | | | | | | |
| | | | | | MONITOR | t | | | | |
| REPORTING QUARTER: | Fourth, 2016 | | | | MODEL: | | Fuel Gas | Flow Ra | te/FG H2S CEM | |
| FACILITY: | | | | | MFR: | | | | | |
| St. Paul Park Re | fining Co. LLC | | | | _ | | | | | |
| | | | | | | | | | | |
| | | | | | | | S AND AVE | | | |
| EMISSION SUBJECT ITEM: | EQUIS | | | | | | | | ling average | |
| | | | | | _0 | .030 1 | b 502/πm | btu - 3 h | our rolling average | |
| EMISSION UNIT(S): | No. 1 Crude Va | cuum heate: | r | | EMISSION | U BASIS | · | SIP for | 502 NAAQS | |
| | 1-B-5 | | | | 2400.01 | . 57 1010 | | <u> </u> | OUR MANQU | |
| | | | | • | | | | | | |
| ASSOCIATED ITEMS: | COMG7, BOUI16 | , EQUI178, | STRU10 | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | NG HOURS | | | |
| | | | | | OF EMISS | SION UI | NII: | 2209 | _ | |
| A. EMISSION DATA SUMMAR | lY | | | | B. CEM P | ERFOR | MANCE SU | IMMARY | | |
| 1 DURATION OF EXCE | SS EMISSIONS (HE | (85) | | | 1 DURATION OF CEM DOWNTIME DURING | | | | | |
| | | lb/hr | lb/mmbtu | | s | OURCE | OPERATION | ON (HRS) | | |
| a) Startup/Shutdown | | 0.00 | 0.00 | | | | | | | |
| p) Control equipment | | 0.00 | 0.00 | | a) Monitor malfunction 0.00 | | | | | |
| c) Process problems | | 0.00 | 0.00 | | 1 | | ionitor malfu | inction | 0.00 | |
| d) Other known cause | 5 | 0.00 | 0.00 | | c) QA calibration <u>0.00</u> | | | | | |
| e) Unknown causes f) Soot blowing | | 0.00 | 0.00 | | d) Other known causes 0.00 | | | | | |
| g) Fuel problems | | 0.00 | 0.00 | | e) Unknown causes0.00 | | | | | |
| 2 TOTAL DURATION (H | IRS) | 0.00 | 0.00 | • | 2 T | OTAL D | URATION (| HRS) | 0.00 | |
| 3 PERCENT OF TOTAL | - | | 0.00 | • | 3 PERCENT OF TOTAL | | | | | |
| EXCESS EMISSIONS | | 0.00% | 0.00% | | CEM DOWNTIME 0.00% | | | | | |
| | FOR ORACITY OF | CODD ALL T | MEC IN MINUT | | 00.04050 | | NDD 411 TH | UEO IN 1101 | 170 | |
| | FOR OPACITY, RI | COND ALL 1 | INCO IN MINOT | E3. F | OR GASES | , KEUL | ORU ALL III | MES IN HO | JR3. | |
| % Total Excess Emissions = | | Total Durati | on of Excess Em | nission | s / (Total Q | perating | Time - CEI | M Downtime |) | |
| % Total CEM Downtime = | | CEM Down | time / Total Oper | rating ` | Time | | | | | |
| NOTES: | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| If an averagenment I samify that | the required section | | that I am tamii- | | ha sacolto | and 44- | 4 4n 4h - 5 4 | حصا برمو کم | Indea there were at average | |
| during the reporting period. I ce | | | | | | | | | ledge there were no exceedances mation is valid. | |
| SUBMITTED BY: | See certificat | ion page a | t front of r | eport | : | | _ | DATE: | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|--|----------------------|---|-------------------------------|
| EMISSION UNIT(S): | | 1-8-5 | |
| POLLUTANT MONITORED: | | S02 - 1b/hr | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCENTRATION (lb/hr, 3-hour avg) | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown 10/1/2016 | | No occupant | |
| 1/1/2017 Total | 0.00 | No excess emissions. | |
| b) Control equipment 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| c) Process problems 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | The except characters. | |
| d) Other known causes 10/1/2016 1/1/2017 | 0.00 | No excess emissions. | |
| Total | 0,00 | | |
| e) Unknown causes 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | • |
| f) Soot blowing 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| g) Fuel problems 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |

| REPORTING QUARTER: | | Pourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|---|----------------------|-------------------------------|-------------------------------|
| EMISSION UNIT(S): | | 1-B-5 | |
| POLLUTANT MONITORED: | | S02 - 1b/mmbtu | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCENTRATION (Ib/mmBtu) | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown 10/1/2016 | | | |
| 1/1/2017 Total | 0.00 | No excess emissions. | |
| b) Control equipment 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| f) Soot blowing 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| g) Fuel problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE#: #0203 (AI ID 447) |
|----------------------------|--|---------------------------|------------------------------|
| EMISSION UNIT(S): | | 1-B-5, Fuel Gas Flow Rate | |
| POLLUTANT MONITORED: | | 502 | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | |
| a) Monitor maltunction | 40:00 | | |
| b) Non-monitor malfunction | | | |
| Total | 0.00 | - | |
| c) OA/calibration) | 0.00) | | |
| d) Other known causes | | | |
| Total | 0.00 | - | |
| e) Unknown Causess | ************************************** | | |

AQD FILE #: #0203 (AT ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 NOx | CO | CO2 | 02 | TRS H | 2S HCL | Opacity | |
|---|------------------------|---------------|----------------|-----------|-------------------|------------------|----------------|---------------------------------------|
| | Other: Flow | | _ | MONITO | OR. | | | |
| REPORTING QUARTER: | Fourth, 2016 | | _ | MODEL | | l Gas Flow Rate | /PG H2S CEM | |
| ACILITY: | | | | MFR; | | | | |
| St. Paul Park Ro | efining Co. LLC | | _ | | | | | |
| | | | _ | EMISSI | ON LIMIT AND | AVERAGE TIME: | | |
| MISSION SUBJECT ITEM: | EQUI6 | | _ | | | 2/hr - 3 hour : | colling averag | e |
| | | | _ | | 0.90 lb SO2 | /mmbtu - 3 hour | rolling aver | age |
| EMISSION UNIT(S): | Crude Charge Heater | | | EMI\$SI | ON BASIS: | SIP for SO | 2 NAAOS | |
| | Heater 1-8-7 | | - | | | | | |
| ASSOCIATED ITEMS: | COMG7, COMG14, EQUII | 163. EQUI18 | 2. EQUI183 | 3, STRU | 69 | | | |
| | | | | OPERA | TING HOURS | OF EMISSION UNIT | : | |
| | | | | | | Total | Fuel Gas | Fuel Oil |
| | | | | | | 2209 | 2209 | 0 |
| A. EMISSION DATA SUMMA | .RY | | | B. CEM | Performance | Summary | | |
| | ESS EMISSIONS (HRS) | | | | | CEM DOWNTIME | DURING | |
| 1 | ····· | lb/hr | lb/mmbtu | ı | SOURCE OPE | RATION (HRS) | | |
| a) Startup/Shutdown | | 0.00 | 0.00 | | | , . | Fuel Gas | Fuel Oil |
| b) Control equipment | | 0.00 | 0.00 | | a) Monitor malf | unction | 0.00 | 0.00 |
| c) Process problems | | 0.00 | 0.00 | | 0.00 | | | |
| d) Other known caus | es | 0.00 | 0.00 | | c) QA calibration | 0.00 | 0.00 | |
| e) Unknown causes | | 0.00 | 0.00 | | d) Other known | 0.00 | 0.00 | |
| f) Soot blowing | | 0.00 | 0.00 | | e) Unknown ca | uses | 0.00 | 0.00 |
| g) Fuel problems | | 0.00 | 0.00 | | | | | |
| 2 TOTAL DURATION (| HRS) | 0.00 | 0.00 | 2 | TOTAL DURA | TION (HRS) | 0.00 | 0.00 |
| 3 PERCENT OF TOTA | L | | | 3 | PERCENT OF | TOTAL | | |
| EXCESS EMISSION | s | 0.00% | 0.00% | 4 | CEM DOWNT | ME | 0.00% | 0.00% |
| | FOR OPACITY, RECORD | ALL TIMES IN | MINUTES. | FOR GA | SES. RECORD | ALL TIMES IN HOL | | |
| | | | | | | | | |
| % Total Excess Emissions = | Total Ouratio | n of Excess E | missions / (To | otal Open | ating Time - CE | Vi Downtime) | | |
| NOTES: There was zero | fuel oil runtime duri: | ng the quar | ter. | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| fino exceedances: I certify the furing the reporting period. I c | | | | | | | | no exceedances |
| SUBMITTED BY: | See certification pa | | • | | | DATE: | | |
| JOBINI HED D1. | | - <u>-</u> - | | - | | PAIL. | | · · · · · · · · · · · · · · · · · · · |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|-----------------------|-------------------|----------------------|-------------------------------|
| EMISSION UNIT(S): | | EQU16 | |
| POLLUTANT MONITORED: | | S02 1b/hr | |
| | TOTAL DURATION | | |
| DATE/TIME | (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | - | |
| b) Control equipment | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| c) Process problems | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | - | |
| d) Other known causes | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| e) Unknown causes | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| f) Soot blowing | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0,00 | | |
| g) Fuel problems | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |

| REPORTING QUARTER: | | Pourth, 2016 | AC | DD FILE #: #0203 (AI ID 447) |
|---|----------|------------------------|-------------------------|------------------------------|
| EMISSION UNIT(S): | | EQUI6 | | |
| POLLUTANT MONITORED: | | SO2 lb/mmbtu | | |
| | TOTAL | | | |
| | DURATION | | | |
| DATE/TIME | (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shutdown | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | _ NO excess emissions. | | |
| TOLEI | 0.00 | | | |
| b) Control equipment | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions, | | |
| Total | 0.00 | - | | |
| | | | | |
| c) Process problems | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | | | |
| | | | | |
| d) Other known causes | | | | |
| 10/1/2016 | | Na | | |
| 1/1/2017 Total | 0.00 | No excess emissions. | | |
| IOIAI | 0.00 | | | |
| e) Unknown causes | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | | | |
| | | | | |
| f) Soot blowing | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | - | | |
| -> Fl | | | | |
| g) Fuel problems | | | | |
| 10/1/2016 | | No evenes emissions | | |
| 1/1/2017 | 0.00 | No excess emissions. | | |
| Total | Ų,UU | | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FRE # #0203 (AI ID 447) | |
|----------------------------|----------------------------|-------------------------|-----------------------------|--|
| EMISSION UNIT(S): | | Heater 1-B-7 | | |
| POLLUTANT MONITORED: | | Fuel Gas Flow Rate | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | | |
| a) Monitor malfunction | 0.00 | - | | |
| b) Non-monitor malfunction | | | | |
| Total | 0.00 | - | | |
| c) QA calibration | . 0:00 | | | |
| d) Other known causes | | | | |
| Total | 0.00 | - | | |
| e) Unknown causes. | 0.00 | <u>-</u> | | |

| REPORTING QUARTER: | | Fourth, 2016 | | AQD FILE # #0203 (AI ID 447) | | | | | | |
|----------------------------|----------------------------|--------------|-------------------|------------------------------|--|--|-----|---|--|--|
| EMISSION UNIT(S): | | Heater | 1-B-7 | | | | | | | |
| POLLUTANT MONITORED: | | Fuel 0 | il Flow Rate | _ | | | | | | |
| DATE/TIME | TOTAL DURATION (HRS) | | CORRECTIVE ACTION | | | | | | | |
| a) Monitor malfunction | 0.00 | - | | | | | . , | , | | |
| b) Non-monitor malfunction | | | | | | | | | | |
| Total | 0.00 | - | | | | | | | | |
| c) QA calibration | 0.00 | | | | | | : | | | |
| d) Other known causes | | | | | | | | | | |
| Tota! | 0.00 | - | | | | | | | | |
| a) Unknown causes Total | T 0.00 | ; | | | | | | | | |

AQD FILE#: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | \$O2 | NOx | co | CO2 | 02 | TRS | H2\$ | HCL | Opacity |
|---|-------------------|---------------|-------------------|--------------------|---|-----------|-------------|-------------|---------------------|
| | Other: | Flow | | | | | | | |
| | | | | | MONITO | | | | |
| REPORTING QUARTER: | Fourth, 2016 | | | | MODEL: | | Fuel Gas | Flow Rat | e/FG H2S CEM |
| FACILITY: | | | | | MFR: | | | | |
| St. Paul Park Ref | fining Co. LLC | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | RAGING TIM | |
| EMISSION SUBJECT ITEM: | EQUI7 | | | | _ | | | | rolling average |
| | | | | | ** | 0.030 | 15 SO2/mm | btu - 3 h | our rolling average |
| EMISSION UNIT(S): | Distillate Unit | finer | | | EMISSIC | ON BASIS | S: | SIP for S | 02 NAAQS |
| | 29-B-1, 29-B-2 | | | | | | | | |
| ASSOCIATED ITEMS: | COMG7, EQUI163, | EQUI184, | STRU68 | | | | | | |
| | | | <u> </u> | | | | | | |
| | | | | | OF EMIS | _ | ING HOURS | 1928 | |
| | | | | | OF EIVIG | SOLONO | 1911. | 1928 | - |
| A. EMISSION DATA SUMMAR | Υ | - | | | B. CEM | PERFOR | MANCE SU | MMARY | |
| 1 DURATION OF EXCES | SS EMISSIONS (HRS |) | | | | | | | - |
| | | fb/hr | lb/mmbtu | | | | | DOWNTIM | E DURING |
| a) Startup/Shutdown | | 0.00 | 0.00 | | | | E OPERATIO | | |
| b) Control equipment | | 0.00 | 0.00 | | a) Monitor malfunction 0.00 | | | | |
| c) Process problems | | 0.00 | 0.00 | | b) Non-monitor malfunction 0.00 | | | | |
| d) Other known causes e) Unknown causes | • | 0.00 | 0.00 | | c) QA calibration 0.00 d) Other known causes 0.00 | | | | |
| f) Soot blowing | | 0.00 | 0.00 | | e) Unknown causes 0.00 | | | | |
| g) Fuel problems | | 0.00 | 0.00 | | | ., | | | |
| 2 TOTAL DURATION (HI | RS) | 0.00 | 0.00 | | 2 TOTAL DURATION (HRS) 0.00 | | | | |
| 3 PERCENT OF TOTAL | | | | 3 PERCENT OF TOTAL | | | | | |
| EXCESS EMISSIONS | | 0.00\$ | 0.00% | | ' | CEM DO | WNTIME | | 0.00% |
| | FOR OPACITY, RE | CORD ALL TI | MES IN MINUTE | S. F | OR GASE | S, REC | ORD ALL TI | MES IN HOU | JRS, |
| | | | | | | | | | |
| % Total Excess Emissions = | | Total Duratio | on of Excess Emi | SSIO | ns / (Total (| Operating | g Time - CE | M Downtime |) |
| % Total CEM Downtime = | | CEM Downt | ime / Total Opera | ting | Time | | | | |
| NOTES: | | | | | | | | | |
| | <u></u> | | | | | | | | |
| | | | | | | | | | |
| | | | | | · | | | | |
| 1 | | | | | | | | | |
| If no exceedances: 1 certify that | | | | | | | | | |
| during the reporting period. I ce | • | | • | | | e best of | my knowied | _ | nation is valid. |
| SUBMITTED BY: | See certificati | on page at | Trone or re | por | į. | | _ | DATE: | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE#: #0203 (AI ID 447) |
|---|----------------|----------------------|------------------------------|
| EMISSION UNIT(S): | | 29-B-1, 29-B-2 | |
| POLLUTANT MONITORED: | | \$02 - 1b/hr | |
| | TOTAL DURATION | | |
| DATE/TIME | (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | • | |
| b) Control equipment 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| f) Soot blowing 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| g) Fuel problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE#: #0203 (AI ID 447) |
|---|----------------|-----------------------|------------------------------|
| EMISSION UNIT(S): | | 29-B-1, 29-B-2 | |
| POLLUTANT MONITORED: | | SO2 - 1b/mmbtu | |
| | TOTAL DURATION | | |
| DATE/TIME | (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | - | |
| b) Control equipment 10/1/2016 1/1/2017 Total | g.00 | No excess emissions. | |
| c) Process problems 10/1/2018 1/1/2017 Total | ō.00 | _No excess emissions. | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| f) Soot blowing 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| g) Fuel problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|----------------------------|---------------------------------------|----------------------------------|-------------------------------|
| EMISSION UNIT(S): | | 29-B-1, 29-B-2 Fuel Gas Flow Rat | <u>e</u> |
| POLLUTANT MONITORED: | | S02 | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | |
| a) Monitor malfunction. | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | |
| b) Non-monitor malfunction | | | |
| Total | 0.00 | - | |
| c)(QA)(calibration) | 0100 P2 > 1 | | |
| d) Other known causes | | | |
| Total | 0,00 | - | |
| e) Unknown causes | 0.007 | | |

AQD FILE #: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 | NOx | CO | CO2 | 02 | TRS | H2S | HCL | Opacity | | |
|--|--|-------------------------------|--|-------------------|---------------------------------------|-----------------------|----------------------------------|------------------------------|---|----|--|
| | Other: | Flow | | - | | _ | | | | | |
| REPORTING QUARTER: Fourth, 2016 | | | | | MODEL: | R | Fuel Gas | Flow Rat | e/FG H2S CEM | | |
| FACILITY: | | | | | MFR: | | | | | | |
| St. Paul Park Re | fining Co. LL | 2 | | _ | | | | | | | |
| | | | | - | | | | | | | |
| | | | | | | | S AND AVE | | | | |
| EMISSION SUBJECT ITEM: | RQUIS | | | • | | | | | lling average | | |
| | | | | | _5 | 1.030 | Lb SQ2/mm | otu - 3 n | our rolling average | | |
| EMISSION UNIT(S): | Naphtha Unif | iner Heat | er | | EMISSIO | N BASI | S: <u>.</u> | SIP for S | OZ NAAQS | | |
| | 3-B-1, 3-B-2 | , 3-B-3 | | | | | _ | | • | | |
| ASSOCIATED ITEMS: | COMG9, COMG7 | , EQUI163 | , EQUI105, | STRU1 | 9 | | | | | | |
| | | | | | TOTAL O | PERAT | ING HOURS | } | | | |
| | | | | | OF EMIS | SION U | NIT: | 1551 | | | |
| A. EMISSION DATA SUMMAI | RY | | | | B. CEM I | PERFOR | RMANCE SU | IMMARY | | | |
| 1 DURATION OF EXCE | | HRS) | | | 1 DURATION OF CEM DOWNTIME DURING | | | | | | |
| • | | lb/hr | lb/mmbtu | | 5 | OURCE | OPERATIO | ON (HRS) | | | |
| a) Startup/Shutdown | | 0.00 | 0.00 | • | | | | | | | |
| b) Control equipment | | 0.00 | 0.00 | | • | - | or malfunction | | 0.00 | | |
| c) Process problems | | 0.00 | 0.00 | • | | * . | onitor malfu | nction | 0.00 | | |
| d) Other known cause | :\$ | 0.00 | 0.00 | • | | • | libration | | 0.00 | | |
| e) Unknown causes | | 0.00 | 0.00 | - | | • | known cause | es | 0.00 | | |
| f) Soot blowing | | 0.00 | 0.00 | | e |) Unkno | wn causes | | 0.00 | | |
| g) Fuel problems | IDO: | 0.00 | 0.00 | • | | | | | | | |
| 2 TOTAL DURATION (F | • | 0.00 | 0.00 | | 2 TOTAL DURATION (HRS) 0.00 | | | | | | |
| 3 PERCENT OF TOTAL | | | | | 3 PERCENT OF TOTAL CEM DOWNTIME 0.00% | | | | | | |
| EXCESS EMISSIONS | • | 0.00% | 0.00% | • | , | EM DO | WNIIME | | 0.00% | | |
| | FOR OPACITY, I | RECORD AL | L TIMES IN M | INUTE | s. FOR G | SASES, | RECORD A | LL TIMES IN | HOURS. | | |
| % Total Excess Emissions = | | Total Durati | on of Excess E | missio | ns / (Total | Operati | ng Time - CE | M Downtim | e) | | |
| % Total CEM Downtime = | | CEM Down! | time / Total Ope | erating | Time | | | | | | |
| NOTES: | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | - | | | | | | | | |
| if no exceedances: I certify tha exceedances during the reporti valid. | t the required analy ng period. I certify | rses were ma that I am far | ade, that I am f niliar with the in | amiliar nforma | with the n | esults, a report a | nd that to the ind that to th | e best of my e best of my | knowledge there were no rknowledge the information | ís | |
| SUBMITTED BY: | See certifica | ition pag | e at front | of re | port | | _ : | DATE: | | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI_ID_447) |
|---|-------------------|------------------------|-------------------------------|
| EMISSION UNIT(S): | | 3-B-1, 3-B-2, 3-B-3 | |
| POLLUTANT MONITORED: | | S02 - 1b/hr | |
| | TOTAL DURATION | | |
| DATE/TIME | (HRS) | MAX. CONCENTRATION (| CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| b) Control equipment 10/1/2015 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | _ No excess emissions. | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0.00 | _ No excess emissions. | |
| Total | 0.00 | | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | |
| f) Soot blowing 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | - | |
| g) Fuel problems 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQDFILE#: #0203 (AI ID 447) |
|---|----------------------------|------------------------|-----------------------------|
| EMISSION UNIT(S): | | 3-B-1, 3-B-2, 3-B-3 | ,, |
| POLLUTANT MONITORED: | | SO2 - 1b/mmbtu | <u></u> |
| QATE/TIME | TOTAL DURATION (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | _ | |
| b) Control equipment 10/1/2016 1/1/2017 | | _ No excess emissions. | |
| Total | 0.00 | | |
| c) Process problems 10/1/2016 1/1/2017 _ | | _No excess emissions. | |
| Total | 0.00 | _ | |
| d) Other known causes 10/1/2016 1/1/2017 _ | | _No excess emissions. | |
| Total | 0.00 | | |
| e) Unknown causes 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | |
| f) Soot blowing 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| g) Fuel problems 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |

| REPORTING QUARTER: | | Fourth, 2016 | AOD FILE # #0203 (AI ID 447) |
|----------------------------|----------------------------|-----------------------------|------------------------------|
| EMISSION UNIT(S): | | 3-B-1,2,3 Fuel Gas Flow Rat | :e |
| POLLUTANT MONITORED: | | S02 | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | |
| a) Monitor malfunction | 0.00 | | |
| b) Non-monitor malfunction | | | |
| Total | 0.00 | _ | |
| c)\OA\Calibration | 0!00 | | |
| d) Other known causes | | | |
| Total | 0.00 | _ | |
| e) Unknown causes Total | J=0100E | | |

AQDFILE#: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 | NOx | co | CO2 | O2 | TRS | H2S | HCL | Opacity | |
|--|----------------------|----------------|----------------|---------|-----------------------------|------------|----------------|---------------|-----------------------|----------------|
| | Other: | Flow | | | | | | | | |
| | | | | • | MONITO | R | | | | |
| REPORTING QUARTER: | Fourth, 2016 | | | - | MODEL: | | Fuel Gas | Flow Rate | /FG H2S CEM | |
| FACILITY: | | | | | MFR: | | | | | |
| St. Paul Park F | Refining Co. LL | c | | _ | _ | | | | | |
| | | | | • | | | | | | |
| | | | | | EMISSIC | N LIMIT | S AND AVE | RAGING TIM | E: | |
| EMISSION SUBJECT ITEM: | EQUI9 | | | - | _ | | | | olling average | |
| | | | | | - | 0.030 1 | b SO2/mm | otu - 3 ho | ur rolling avera | ige |
| EMISSION UNIT(S): | Platformer Ch | arge Heater | | | EMISSIC | N BASIS | S: <u>£</u> | SIP for SO | 2 NAAQS | |
| | 3-B-4 | | | | | | | | | |
| | | | | | | | | | | |
| ASSOCIATED ITEMS: | COMG9, COMG7, | EQUI163, E | QUI186, ST | rru67 | • | | | | | |
| | | | | | TOTAL (| DEBATI | NG HOURS | | | |
| | | | | | OF EMIS | | | 1751 | | |
| | | | | | OI CIVIL | .0.0.1 | - | 1/31 | | |
| A. EMISSION DATA SUMMA | ARY | | | | B. CEM | PERFOR | MANCE SU | MMARY | | |
| 1 DURATION OF EXC | CESS EMISSIONS (| HRS) | | | 1 | DURATIC | ON OF CEM | DOWNTIME | DURING | |
| | | lb/hr | ib/mmbtu | | i . | SOURCE | OPERATIO | ON (HRS) | | |
| a) Startup/Shutdown | | 0.00 | 0.00 | - | | | | | | |
| b) Control equipment | | 0.00 | 0.00 | | | • | r malfunctio | _ | 0.00 | |
| c) Process problems | | 0.00 | 0.00 | | | • | ionitor malfu | nction _ | 0.00 | |
| d) Other known caus | ses | 0.00 | 0,00 | | | c) QA cal | | _ | 0.00 | |
| e) Unknown causes | | 0.00 | 0.00 | | | • | known cause | es _ | 0.00 | |
| f) Soot blowing | | 0.00 | 0.00 | |] ' | e) Unkno | wn causes | _ | 0.00 | |
| g) Fuel problems | | 0.00 | 0.00 | • | | | | | | |
| 2 TOTAL DURATION | | 0.00 | 0.00 | | 2 TOTAL DURATION (HRS) 0.00 | | | | | |
| 3 PERCENT OF TOTA | | | | | | | IT OF TOTA | L | | |
| EXCESS EMISSION | NS | 0.00% | 0.00% | • | | CEM DO | WNTIME | - | 0.00% | |
| | FOR OPACITY, R | ECORD ALL T | IMES IN MIN | UTES. | FOR GA | SES, RI | ECORD ALL | TIMES IN H | OURS. | |
| % Total Excess Emissions = | | Total Duration | of Excess E | mission | ns / (Total | Operatin | g Time - CE | M Downtime |) | |
| % Total CEM Downtime = | | CEM Downtin | ne / Total One | eratino | Time | | | | | |
| | | | | - | | | | | | |
| NOTES: | | | | | | | | . | | |
| ······································ | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| If no exceedances: I certify th | at the required anal | yses were mad | e, that I am f | emiller | with the r | esults, ar | id that to the | best of my k | mowledge there were | no exceedances |
| during the reporting period. I | = | | | - | | at to the | best of my k | nowledge the | information is valid, | |
| SUBMITTED BY: | See certificat | ion page a | t front of | rep | ort | | 1 | DATE: | | |

| REPORTING QUARTER: | | Pourth, 2016 | AQDFILE #: #0203 (AI ID 447) | |
|-----------------------|-----------------------|-----------------------------|------------------------------|--|
| EMISSION UNIT(S): | | 3-B-4 | | |
| POLLUTANT MONITORED: | | S02 - 1b/hr | | |
| OATE/TIME | TOTAL DURATION (HR | S) MAX. CONCENTRATION CAUSE | E/CORRECTIVE ACTION | |
| a) Startup/Shutdown | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | _ | | |
| b) Control equipment | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | | | |
| c) Process problems | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | | | |
| d) Other known causes | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | _ | | |
| e) Unknown causes | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | | | |
| f) Soot blowing | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | | | |
| g) Fuel problems | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | n ôn | _ | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE # #0203 (AI ID 447) |
|------------------------------------|--------------|-----------------------------|------------------------------|
| EMISSION UNIT(S): | | 3-B-4 | |
| POLLUTANT MONITORED: | | S02 - 1b/mmbtu | |
| | TOTAL | | |
| DATE/TIME [| DURATION (HR | S) MAX. CONCENTRATION CAUSE | /CORRECTIVE ACTION |
| a) Startup/Shutdown | | | |
| 10/1/2016 | | | |
| 1/1/2017 _ | | No excess emissions. | |
| Total | 0.00 | | |
| b) Control equipment | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| -) D soss norblows | | | |
| c) Process problems 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | <u> </u> | |
| D 60 b | | | |
| d) Other known causes 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| h III haanna aanaaa | | | |
| e) Unknown causes 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| | | | |
| f) Sout blowing | | | |
| 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0,00 | NO excess emissions. | |
| | | | |
| g) Fuel problems | | | |
| 10/1/2016 1/1/2017 | | No excess emissions. | |
| 7//2017 | 0.00 | | |

| REPORTING QUARTER: | Fourth, 2016 | AQDFILE#. #0203 (AI ID 447) |
|-------------------------------------|---------------------------------------|-----------------------------|
| EMISSION UNIT(S): | 3-B-4 Fuel Gas F | Flow Rate |
| POLLUTANT MONITORED: | S02 | |
| | TOTAL RATION (HRS) CAUSE/CORRECTIV | VE ACTION |
| a) Monitor malfunction | 10100 | |
| b) Non-monitor malfunction | | |
| Total | 0.00 | |
| c) QA\calibration \(\frac{1}{2} \) | # 0100 W | |
| d) Other known causes | | |
| Total | 0.00 | |
| e) Unknown causes | 31.30100 Table 1 | |

AQD FILE #: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| REPORTING QUARTER: FOURTH, 2016. MONITOR MODEL: Pael Gas Plow Rate/FG II28 CEM FACILITY: St. Paul Park Refining Co. LLC EMISSION SUBJECT ITEM: BQUI10 EMISSION UNIT(S): Plat former interheater #1 EMISSION BASIS: SIP for SO2 NAAQS EMISSION UNIT(S): Plat former interheater #1 EMISSION BASIS: SIP for SO2 NAAQS ASSOCIATED ITEMS: COMGS, COMGS, EQUI163, EQUI187, STRU66 TOTAL OPERATING HOURS OF EMISSION UNIT: 1719 A EMISSION DATA SUMMARY 1 DURATION OF EXCESS EMISSIONS (HRS) a) Startup/Shutdown 0.0.00 0.00 b) Control equipment 0.00 0.00 b) Control equipment 0.00 0.00 c) Process problems 0.00 0.00 c) Phoness problems 0.00 0.00 c) Do 0.00 c) | POLLUTANT (circle one): | SQ2 | NOx | CO | CO2 | 02 | TRS | H2S | HCL | Opacity | |
|--|--|--|-------------------------------------|--------------------------------|----------|---------------------------|--------------------------|------------------------------|-------------------------------|---|---------------------------------------|
| REPORTING QUARTER: Pour Park Refining Co. LLC EMISSION SUBJECT ITEM: EQUI10 | | Other: | Plow . | | | | | | | | |
| FACILITY: St. Paul Park Refining Co. LLC | | | | | _ | MONITO | R | | | | |
| EMISSION SUBJECT ITEM: EQUITO EMISSION LIMITS AND AVERAGING TIME: 1.68 1b 502/fr - 3 hr rolling average 0.030 1b 502/mmbtu - 3 hour rolling average 1.68 1b 502/fr - 3 hr rolling average 2.030 1b 502/mmbtu - 3 hour rolling average EMISSION UNIT(S): Platformer interheater #1 EMISSION BASIS: SIP for S02 NAAQS TOTAL OPERATING HOURS OF EMISSION UNIT: 1719 A EMISSION DATA SUMMARY 1 DURATION OF EXCESS EMISSIONS (HRS) 1 DURATION OF EXCESS EMISSIONS (HRS) 1 DURATION OF EXCESS EMISSIONS (HRS) 2) Startup/Shutdown 2) 0.00 3) Startup/Shutdown 3) Startup/Shutdown 4) Control equipment 4) 0.00 4) DO 0.00 5) Non-monitor malfunction 6) Control equipment 7) 0.00 6) Unknown causes 7) 0.00 6) Unknown causes 7) 0.00 7) Soot blowing 7) For Control equipment 7) 0.00 7) Soot blowing 7) For Control equipment 7) 0.00 7) Soot blowing 7) For Control equipment 7) 0.00 7) Soot blowing 7) For Control equipment 7) 0.00 7) Soot blowing 7) For Control equipment 7) 0.00 7) Soot blowing 7) For Control equipment 7) 0.00 7) Soot blowing 7) For Control equipment 7) 0.00 7) Soot blowing 7) For Control equipment 7) 0.00 7) Soot blowing 7) For Control equipment 7) 0.00 7) Soot blowing 7) For Control equipment 7) 0.00 7) Soot blowing 7) For Control equipment 7) 0.00 7) Soot blowing 7) For Control equipment 7) 0.00 7) Soot blowing 7) For Control equipment 7) 0.00 7) Soot blowing 7) For Control equipment 7) 0.00 7) Soot blowing 7) For Control equipment 7) 0.00 7) Soot blowing 7) For Control equipment 7) 0.00 7) Soot blowing 7) For Control equipment 7) 10 Duration (HRS) 7) 10 Dura | REPORTING QUARTER: | Fourth, 2016 | | | _ | MODEL: | | Fuel Gas | Flow Rate | e/FG H2S CEM | |
| EMISSION SUBJECT ITEM: EQUT10 EMISSION LIMITS AND AVERAGING TIME: 1.68 1b 502/fr - 3 hr rolling average 0.030 1b 502/mmbtu - 3 hour rolling average 1.68 1b 502/fr - 3 hr rolling average 0.030 1b 502/mmbtu - 3 hour rolling average EMISSION UNIT(S): Platformer interheater #1 EMISSION BASIS: SIP for SO2 NAAQS TOTAL OPERATING HOURS OF EMISSION UNIT: 1719 A EMISSION DATA SUMMARY 1 DURATION OF EXCESS EMISSIONS (HRS) 1 DURATION OF EXCESS EMISSIONS (HRS) 1 DURATION OF EXCESS EMISSIONS (HRS) 2) Startup/Shutdown 1) Control equipment 1) | FACILITY: | | | | | MFR: | | | | | |
| EMISSION SUBJECT ITEM: EQUI10 | | efining Co. LI | c | | | - | | | | | · · · · · · · · · · · · · · · · · · · |
| 1.68 1b 802/hr - 3 hr rolling average | | | | | _ | | | | | | |
| Description | | | | | | EMISSIC | N LIMIT | S AND AVE | RAGING TIM | IE: | |
| EMISSION UNIT(S): Platformer interheater #1 EMISSION BASIS: SIP for SO2 NAQS | EMISSION SUBJECT ITEM: | EQUI10 | | | _ | | 1.68 11 | SO2/hr - | 3 hr rol | ling average_ | |
| ASSOCIATED ITEMS: COMG9, COMG7, EQUI163, EQUI187, STRU66 | | | | | | _ | 0.030 1 | ib SO2/mml | otu - 3 ho | ur rolling aver | age |
| A EMISSION DATA SUMMARY I DURATION OF EXCESS EMISSIONS (HRS) a) Startup/Shutdown b) Control equipment c) 0.00 c) 0.00 d) 0.00 d) Other known causes 0,00 e) Unknown causes 0,00 e) Un | EMISSION UNIT(S): | Platformer in | terheater # | #1 | | EMISSIC | N BASIS | S: . | SIP for SO | 2 NAAQS | |
| A. EMISSION DATA \$UMMARY | | 3-8-7 | | | - | | | _ | | · | |
| A. EMISSION DATA \$UMMARY | ASSOCIATED ITEMS | COMES COMES | FORTIES S | פ מונדות | TOUCE | | | | | | |
| A. EMISSION DATA SUMMARY | ASSOCIATED ITEMS. | COMBY, COMBY, | | 3Q01187, S | 11000 | - | | | | | |
| A. EMISSION DATA SUMMARY 1 DURATION OF EXCESS EMISSIONS (HRS) 1 DURATION OF EXCESS EMISSIONS (HRS) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HRS) 2) Non-monitor malfunction 0.00 3) Monitor malfunction 0.00 4) Other known causes 0.00 0.00 9) Inknown causes 0.00 0.00 9) Foots blowing 0.00 0.00 9) Fuel problems 0.00 0.00 2 TOTAL DURATION (HRS) 0.00 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00\$ 1 PERCENT OF TOTAL CEM DOWNTIME 0.00\$ 2 TOTAL DURATION (HRS) 0.00 2 TOTAL DURATION (HRS) 0.00 3 PERCENT OF TOTAL CEM DOWNTIME 0.00\$ TOTAL DURATION (HRS) 0.00 4 CEM DOWNTIME 0.00\$ CEM DOWNTIME 0.00\$ CEM DOWNTIME 0.00\$ 1 Total Operating Time - CEM Downtime) 4 Total CEM Downtime = CEM Downtime / Total Operating Time - CEM Downtime) 1 DURATION (FRS) 0.00 1 DURATION (HRS) 0.00 2 TOTAL DURATION (HRS) 0.00 2 TOTAL DURATION (HRS) 0.00 3 PERCENT OF TOTAL CEM DOWNTIME 0.00\$ 4 Total DURATION (HRS) 0.00\$ CEM DOWNTIME 0.00\$ CEM Downtime / Total Operating Time - CEM Downtime) 4 Total CEM Downtime = CEM Downtime / Total Operating Time - CEM Downtime) | | | | | | TOTAL C | PERAT | ING HOURS | ; | | |
| 1 DURATION OF EXCESS EMISSIONS (HRS) 1 DURATION OF EXCESS EMISSIONS (HRS) 1 DURATION OF CEM DOWNTIME DURING 3) Startup/Shutdown 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HRS) 2) Process problems 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HRS) 2) Monitor malfunction 2 Data dibration 2 Data dibration 3 Monitor malfunction 3 Monitor malfunction 3 Monitor malfunction 3 Data dibration 4 Data dibration 5 Data dibration 5 Data dibration 5 Data dibration 6 Data dibration 7 Data Duration (HRS) 8 Data Duration (HRS) 9 Data Duration of Excess Emissions / (Total Operating Time - CEM Downtime) FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. 1 Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) 1 Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: | | | | | | OF EMIS | SION U | NIT: | 1719 | | |
| 1 DURATION OF EXCESS EMISSIONS (HRS) bl/hr lb/mrbtu 1 DURATION OF CEM DOWNTIME DURING 3 Startup/Shutdown 0.00 0.00 SOURCE OPERATION (HRS) 3 Monitor malfunction 0.00 0.00 3 Monitor malfunction 0.00 0.00 0 Monitor malfunction 0.00 0.00 0 Monitor malfunction 0.00 0.00 0 Monitor malfunction 0.00 0.00 0 Monitor malfunction 0.00 0.00 0 Monitor malfunction 0.00 0.00 0 Monitor malfunction 0.00 0.00 0 Monitor malfunction 0.00 0.00 0 Monitor malfunction 0.00 0.00 0 Monitor malfunction 0.00 0.00 0.00 0 Monitor malfunction 0.00 0.00 0.00 0.00 0 Monitor malfunction 0.00 0.00 0.00 0.00 0.00 0 Monitor malfunction 0.00 0.00 0.00 0.00 0 Monitor malfunction 0.00 | A EMISSION DATA SIMMA | ARY | | | | е сем | DEBEOR | MANCE SI | MMARV | _ | |
| a) Startup/Shutdown b) Control equipment c) Process problems 0.00 0.00 b) Non-monitor malfunction c) Process problems 0.00 d) Other known causes 0.00 0.00 e) Unknown causes 0.00 0.00 d) Other known causes 0.00 0.00 e) Unknown causes 0.00 0.00 d) Other known causes 0.00 0.00 e) Unknown causes 0.00 0.00 d) Other known causes 0.00 e) Unknown causes 0.00 0.00 e) Unknown causes 0.00 e) Unknown causes 0.00 e) Unknown causes 0.00 f) Soot blowing 0.00 0.00 e) Unknown causes 0.00 e) Unknown causes 0.00 e) Unknown causes 0.00 f) Soot blowing 0.00 f) See problems 0.00 f) Soot blowing 0.00 f) See problems 0.00 f) Other known causes 0.00 f) Other known causes 0.00 f) Other known causes 0.00 f) Other known causes 0.00 f) See problems 0.00 f) See problems 0.00 f) See problems 0.00 f) Other known causes 0.00 f) Other known causes 0.00 f) Other known causes 0.00 f) Other known causes 0.00 f) See problems 0.00 f) See problems 0.00 f) Other known causes 0.00 f) Other known causes 0.00 f) Other known causes 0.00 f) Other known causes 0.00 f) Other known causes 0.00 f) Other known causes 0.00 f) Other known causes 0.00 f) Other known causes 0.00 f) Other known causes 0.00 f) Other known causes 0.00 f) Other | | | HRS) | | | D. O.L.W. | | WITH OLD | and a contract | | |
| a) Startup/Shutdown b) Control equipment c) 0.00 c) 0.00 c) Process problems d) 0.00 c) Process problems d) 0.00 d) Other known causes d) 0.00 e) Unknown causes d) 0.00 f) Soot blowing g) Fuel problems d) 0.00 d) Other known causes d) 0.00 d) Oth | | | | lb/mmbtu | | 1 1 | OURATIO | ON OF CEM | DOWNTIME | DURING | |
| b) Control equipment c) Process problems 0.00 0.00 0.00 b) Non-monitor malfunction 0.00 c) QA calibration 0.00 d) Other known causes 0.00 0.00 d) Other known causes 0.00 0.00 d) Other known causes 0.00 0.00 d) Other known causes 0.00 e) Unknown causes 0.00 0.00 d) Other known causes 0.00 e) Unknown causes 0.00 g) Fuel problems 0.00 0.00 2 TOTAL DURATION (HRS) 0.00 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00\cdot 0.00\cdo 0.00\cdot 0.00\cdot 0.00\cdot 0.00\cdot 0.00\cdot 0.00\cdot 0.00 | a) Startup/Shutdown | | 0.00 | | | | | | | | |
| c) Process problems d) Other known causes 0.00 0.00 e) Unknown causes 0.00 0.00 f) Soot blowing 0.00 0.00 g) Fuel problems 0.00 0.00 2 TOTAL DURATION (HRS) 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00\\(\frac{1}{2}\) 0.00\(\frac{1}{2}\) 0.00\(\frac{1}\) 0.00\(\frac | 1 ' | | 0.00 | 0.00 | - | | | | | 0.00 | |
| e) Unknown causes 0.00 0.00 d) Other known causes 0.00 () Soot blowing 0.00 0.00 0.00 e) Unknown causes 0.00 () Soot blowing 0.00 0.00 0.00 () Other known causes (0.00 () Other known causes | 1 | | 0.00 | 0.00 | _ | |) Non-m | onitor malfu | nction | 0.00 | |
| fino exceedances: certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances | d) Other known caus | es | 0.00 | 0.00 | _ |) · |) QA ca | libration | _ | 0.00 | |
| g) Fuel problems 2 TOTAL DURATION (HRS) 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00 0.00 2 TOTAL DURATION (HRS) 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00 0.00 2 TOTAL DURATION (HRS) 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00 0.00 2 TOTAL DURATION (HRS) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0 | e) Unknown causes | | 0.00 | 0.00 | | . | d) Other | known cause | es _ | 0.00 | |
| 2 TOTAL DURATION (HRS) 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00\$ 0.00\$ 0.00\$ CEM DOWNTIME FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. **Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) **Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: | f) Soot blowing | | 0.00 | 0.00 | _ | |) Unkno | wn causes | _ | 0.00 | |
| 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00\$ 0.00\$ 0.00\$ FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. % Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) % Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: If no exceedances: certify that the required analyses were made, that am familiar with the results, and that to the best of my knowledge there were no exceedances | g) Fuel probl∉ms | | 0.00 | 0.00 | _ | i | | | | | |
| FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. **Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) **Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: Certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances | 2 TOTAL DURATION (| (HRS) | 0.00 | 0.00 | _ | 2 | TOTAL D | URATION (| HRS) | 0.00 | |
| FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. % Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) % Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: If no exceedances: certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances | 3 PERCENT OF TOTA | L | | | | 3 | PERCEN | IT OF TOTA | L | | |
| % Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) % Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: [If no exceedances: certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances | EXCESS EMISSION | IS | 0.00% | 0.00% | - | ' | CEM DO | WNTIME | - | 0.00% | |
| % Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: | | FOR OPACITY, R | ECORD ALL 1 | TIMES IN MI | NUTES | . FOR G | ASES, R | ECORD AL | L TIMES IN F | lours. | |
| % Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: | | | | | | | | | | | |
| NOTES: If no exceedances: certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances | % Total Excess Emissions = | | Total Duration | of Excess E | missio | ns / (Total | Operation | ng Time - CE | M Downtime |) | |
| If no exceedances: certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances | % Total CEM Downtime = | | CEM Downtin | ne / Total Op | erating | Time | | | | | |
| If no exceedances: certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances | NOTES: | | | | | | | | | | |
| If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during the reporting period. I certify that I am familiar with the information in this report and that to the best of my knowledge the information is valid. | | | | | | | | | | | |
| If no exceedances: certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during the reporting period. certify that I am familiar with the information in this report and that to the best of my knowledge the information is valid. | | | | | | | | | | | |
| If no exceedances: certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during the reporting period. certify that I am familiar with the information in this report and that to the best of my knowledge the information is valid. | | | | | | | | | | | |
| If no exceedances: certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during the reporting period. certify that I am familiar with the information in this report and that to the best of my knowledge the information is valid. | | | | | | | | | | | |
| If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during the reporting period. I certify that I am familiar with the information in this report and that to the best of my knowledge the information is valid. | 44 | | | | | | | | | | |
| | If no exceedances: I certify the during the reporting period. It | at the required and certify that I am fan | yses were mad tiliar with the in | de, that I am nformation in | tamilian | r with the port and ti | results, a rat to the | and that to the best of my ! | ie best of my knowledae ih | knowledge there were information is valid | re no exceedances |
| | SUBMITTED BY: | | | | | | | • | | stringer to your | • |

| REPORTING QUARTER: | Fourth, 2016 | AQD FILE # #0203 (AI ID 447) | | | | |
|--|--------------------------|------------------------------|--|--|--|--|
| EMISSION UNIT(S): | 3-8-7 | | | | | |
| POLLUTANT MONITORED: | 502 - 1b/hr | | | | | |
| TOTAL DURATION DATE/TIME (HRS) | MAX. CONCENTRATION CAUSE | CORRECTIVE ACTION | | | | |
| | | | | | | |
| a) Startup/Shutdown 10/1/2016 1/1/2017 Total 0.00 | _No excess emissions. | | | | | |
| b) Control equipment 10/1/2016 1/1/2017 | _No excess emissions. | | | | | |
| Total 0.00 | | | | | | |
| c) Process problems 10/1/2016 1/1/2017 Total 0.00 | _No excess emissions, | | | | | |
| d) Other known causes 10/1/2016 1/1/2017 Total 0.00 | _No excess emissions. | | | | | |
| · | | | | | | |
| e) Unknown causes 10/1/2016 1/1/2017 Total 0.00 | _No excess emissions. | | | | | |
| f) Soot blowing 10/1/2016 1/1/2017 Total 0.00 | _No excass emissions. | | | | | |
| g) Fuel problems 10/1/2016 1/1/2017 Total 0.00 | _No excess emissions. | | | | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|---|----------------------------|-------------------------|-------------------------------|
| EMISSION UNIT(S): | | 3-B-7 | |
| POLLUTANT MONITORED: | | S02 - 1b/mmbtu | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCENTRATION CAUS | E/CORRECTIVE ACTION |
| a) Startup/Shutdown 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| b) Control equipment 10/1/2016 1/1/2017 _ Total | 0.00 | _ No excess emissions. | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | _ No excess emissions. | |
| d) Other known causes 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | |
| e) Unknown causes 10/1/2016 1/1/2017 _ Total | 0.00 | _ No excess emissions. | |
| f) Soot blowing 10/1/2016 1/1/2017 Total | 0,00 | No excess emíssions. | |
| g) Fuel problems 10/1/2016 1/1/2017 _ Total | 0.00 | _ No excess emissions. | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #. | #0203 (AI_ID 447) |
|-------------------------------|----------------------------|--------------------------|--|-------------------|
| EMISSION UNIT(S): | | 3-B-7 Fuel Gas Flow Rate | | |
| POLLUTANT MONITORED: | | S02 | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | | |
| a) Monitor malfunction | F0!00) | | | |
| b) Non-monitor malfunction | | | | |
| Total | 0.00 | - | | |
| c) QA calibration as a second | 3343 (0100 m) (A | | | |
| d) Other known causes | | | | |
| Total | 0.00 | - | | |
| e) Unknown causes Total | (0:00) | | A STATE OF THE STA | |

AQD FILE #: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 | NOx | co | CO2 | O2 | TRS | H2S | HCL | Opacity | |
|---|---|--|------------------------|----------------------|-------------|----------|--------------------------------|--------------------------------|-------------------------------------|---------------------------------------|
| | Other: | Plow | | | | | | | | |
| | | | ***** | _ | MONITO | R | | | | |
| REPORTING QUARTER: | Fourth, 2016 | | _ · | _ | MODEL: | | Fuel Gas | Plow Rate | e/FG H2S CEM | |
| FACILITY: | | | | | MFR: | | | | | |
| St. Paul Park R | efining Co. LL | c | | _ | _ | | | | | |
| | | | | _ | | | | | | |
| | | | | | EMISSIO | N LIMIT | S AND AVE | RAGING TIM | AE: | |
| EMISSION SUBJECT ITEM: | EQUI11 | | | | | | | | olling avera | |
| | ÷ | | | | _0 | 0.030 | lb SO2/mml | otu - 3 ho | our rolling a | iverage |
| EMISSION UNIT(S): | Platformer In | terheater #2 | : | | EMISSIO | N BASI | S: : | SIP for SC | 2 NAAOS | |
| | 3-8-8 | | | _ | | | - | | 7 | |
| | | | | | | | | | | |
| ASSOCIATED ITEMS: | COMG9, COMG7, | EQUI163, EQ | UI188, S | TRU65 | _ | | | | | |
| | | | | | TOT41 0 | | NO HOUDS | • | | |
| | | | | | OF EMIS | | ING HOURS | | | |
| | | | | | OF EIVIS | SION U | - NI 1: | 1742 | | |
| A. EMISSION DATA SUMMA | ARY | | | | B. CEM F | PERFOR | RMANCE SL | MMARY | | |
| 1 DURATION OF EXC | | HRS) | | | 1 | | | | - | |
| | | lb/hr | lb/mmbtu | | 1 0 | URATIO | ON OF CEM | DOWNTIME | DURING | |
| a) Startup/Shutdown | | 0.00 | 0.00 | _ | [S | OURCE | E OPERATIO | ON (HRS) | | |
| b) Control equipmen | t | 0.00 | 0.00 | _ | a |) Monito | or malfunction | n _ | 0.00 | |
| c) Process problems | | 0.00 | 0.00 | _ | į t |) Non-m | nonitor malfu | nction _ | 0.00 | |
| d) Other known caus | es | 0.00 | 0.00 | _ | i | | libration | - | 0.00 | , |
| e) Unknown causes | | 0.00 | 0.00 | | | • | known cause | es _ | 0.00 | , |
| f) Soot blowing | | 0.00 | 0.00 | _ | • |) Unkno | wn causes | - | 0.00 | |
| g) Fuel problems | | 0.00 | 0.00 | _ | ļ | | | | | |
| 2 TOTAL DURATION (| | 0.00 | 0.00 | _ | • | | DURATION (| | 0.00 | |
| 3 PERCENT OF TOTA | | | | | 1 | | NT OF TOTA | L | | |
| EXCESS EMISSION | iS | 0.00% | 0.00% | _ | · ' | CEM DO | WNTIME | - | 0.00% | , |
| | FOR OPACITY, R | ECORD ALL TI | MES IN MII | NUTES. | FOR GA | SES, RI | ECORD ALL | TIMES IN H | OURS. | |
| % Total Excess Emissions ≤ | | Total Duration | of Excess 8 | Emissio | ns / (Total | Operati | ng Time - CE | M Downtime | ·) | |
| % Total CEM Downtime = | | CEM Downtim | e / Total Or | perating | Time | | | | | |
| | | | | • | | | | | | |
| 140 (Ed | | | | - | | | | | ~ | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | · · · · · · · · · · · · · · · · · · · |
| | | | | | | | | | | |
| If no exceedances: I certify the during the reporting period, I | at the required anal certify that I am fam | yses were made illiar with the info | that I am tormation in | familiar this reo | with the re | sults, a | nd that to the best of my k | e best of my l nowledge the | knowledge there information is v | were no exceedances alid. |
| SUBMITTED BY: | See certifica | | | | | | • | DATE: | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|---|----------------|----------------------|-------------------------------|
| EMISSION UNIT(S): | | 3-B-8 | |
| POLLUTANT MONITORED: | | 502 - 1b/hr | |
| | TOTAL | | |
| DATE/TIME | DURATION (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | • | |
| b) Control equipment 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| f) Soot blowing 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions, | |
| g) Fuel problems 10/1/2016 1/1/2017 Total | 0,00 | No excess emissions. | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE # | #0203 (AI ID 447) | |
|---|----------------|----------------------|-------------------------|-------------------|--|
| EMISSION UNIT(S): | | 3-8-8 | | - | |
| POLLUTANT MONITORED: | | S02 - Lb/mmbtu | | | |
| | TOTAL | | | | |
| DATE/TIME | DURATION (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION | | |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | No excess emissions. | | | |
| Total | 0.00 | | | | |
| b) Control equipment 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | | |
| d) Other known causes 10/1/2016 1/1/2017 Total | | No excess emissions. | | | |
| e) Unknown causes 10/1/2016 1/1/2017 | 0.00 | No excess emissions. | | | |
| Total f) Soot blowing 10/1/2016 1/1/2017 | | No excess emissions. | | | |
| Total | 0.00 | | | | |
| g) Fuel problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | | |

| REPORTING QUARTER: | Fourth, 2016 | AQDFILE# #0203 (AI ID 447) |
|---------------------------------|---|----------------------------|
| EMISSION UNIT(S): | 3-B-8 Fuel Gas Flow R | tate |
| POLLUTANT MONITORED: | S02 | <u> </u> |
| DATE/TIME | TOTAL DURATION (HRS) CAUSE/CORRECTIVE ACT | ION |
| a) Monitor malfunction Total | 25-38-38-31 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | |
| b) Non-monitor malfunction | | |
| Total | 0.00 | |
| c),QA/callibration | 0.000 | |
| d) Other known causes | | |
| Total | 0.00 | |
| e) Unknown causes | 70.00 | |

AQD FILE #: #0203 (AI ID 447)

DATE:

EXCESS EMISSION AND CEM REPORTING FORM

| REPORTING QUARTER: Fourth, 2016 MODEL: Fuel Gas Flow Rate/FG R2S CEM FACILITY: St. Faul Park Setining Co. LLC EMISSION SUBJECT ITEM: EQUI12 EMISSION UNIT(S): Desulfurizer Reater | POLLUTANT (circle one): | SO2 | NOx | co | COS | 02 | TRS | H2S | HCL | Opacity |
|--|----------------------------|----------------|-----------------|-----------------|-------------------|--------------|----------|-------------|------------------|-------------------|
| REPORTING QUARTER: Fourth, 2016 MODEL: Pinel Gas Plow Rate/PG R2S CEM | | Other: | Flow | | _ | | | | | |
| FACILITY: | PEPOPTING OURPED | Fourth 2016 | | | | | ₹ | Fuel Car | Flow Date | איני עמב משא |
| EMISSION SUBJECT ITEM: EMISSION UNIT(S): Desulfurizer Heater Heater 34-8-1 ASSOCIATED ITEMS: OM67, COM614, EQUI163, EQUI189, MR029, STRU64 EMISSION DATA SUMMARY DURATION OF EXCESS EMISSIONS (HRS) 1 Startup/Shutdown 0,00 0,00 1) Control equipment 0,00 0,00 1) Control equipment 0,00 0,00 1) Control equipment 0,00 0,00 1) Other known causes 0,00 0,00 1) Inshorm malturetion 0,00 1) Startup/Shutdown 1) Duration of EXCESS EMISSIONS (HRS) 1) Startup/Shutdown 1) Other known causes 0,00 0,00 1) Startup/Shutdown 1) Other known causes 0,00 0,00 1) Startup/Shutdown 1) Duration (HRS) 1) Startup/Shutdown 1) Duration (HRS) 1) Startup/Shutdown 1) Other known causes 0,00 0,00 1) Startup/Shutdown 1) Duration (HRS) 1) Startup/Shutdown 1) Duration (HRS) 1) Startup/Shutdown 1) Duration (HRS) 1) Startup/Shutdown 1) Duration (HRS) 1) Startup/Shutdown 1) Duration (HRS) 1) Startup/Shutdown 1) Duration (HRS) 1) Startup/Shutdown 1) Duration (HRS) 1) Startup/Shutdown 1) Duration (HRS) 1) Startup/Shutdown 1) Duration (HRS) 1) Startup/Shutdown 1) Duration (HRS) 1) Startup/Shutdown 1) Duration (HRS) 1) Startup/Shutdown 1) Duration (HRS) 1) Startup/Shutdown 1) Startup/Shutdown 1) Duration (HRS) 1) Duration (HRS) 1) Duration (HRS) 1) Duration (HRS) 1) Duration (HRS) 1) Duration (HRS) 1) Durat | NEFORTING GOARTER. | F501 CH, 2015 | | | - | MODEL. | | FRET GES | FIOW RACE | FFG H25 CEN |
| EMISSION SUBJECT ITEM: EMISSION UNIT(S): Desulfurizer Heater Heater 34-B-1 ASSOCIATED ITEMS: COM67, COM614, EQUI163, EQUI189, MR029, STRU64 TOTAL OPERATING HOURS OF EMISSION UNIT: 1788 A. EMISSION DATA SUMMARY DURATION OF EXCESS EMISSIONS (HRS) 1 Bi/hr Ib/mmtbu 1 SURARCIO PERATING HOURING SURGE OPERATION (HRS) 1 DURATION OF EXCESS EMISSIONS (HRS) 1 DURATION OF EXCESS EMISSIONS (HRS) 1 DURATION OF EXCESS EMISSIONS (HRS) 2 OPPORTURE OF THE MEAN OF THE | FACILITY: | | | | | MFR: | | · | | |
| EMISSION SUBJECT ITEM: 20112 | St. Paul Park R | efining Co. LL | c | | - | | | | | |
| EMISSION UNIT(S): Desulfurizer Heater | | | •••• | | - | EMISSIO | N LIMIT | AND AVERA | GE TIME: | |
| EMISSION UNIT(S): Desulfurizer Heater | EMISSION SUBJECT ITEM: | EQUI12 | | | _ | <u>o</u> | .76 lb | S02/hr - | 3 hour ro | lling average |
| Heater 34-B-1 | | | | | | <u>o</u> | .030 1 | b SO2/mmbt | <u>u - 3 hou</u> | r rolling average |
| ASSOCIATED ITEMS: COMG7, COMG14, EQUI163, EQUI169, MR029, STRU64 TOTAL OPERATING HOURS OF EMISSION UNIT: 1788 A. EMISSION DATA SUMMARY DURATION OF EXCESS EMISSIONS (HRS) 1 Ib/Inr Ib/Immtbu SOURCE OPERATION (HRS) 1 Startup/Shutdown 0,00 | EMISSION UNIT(S): | Desulfurizer | Heater | | | EMISSIO | N BASIS | : : | SIP for S | D2 NAAOS |
| A. EMISSION DATA SUMMARY | , , | Heater 34-B- | 1 | | _ | | | - | | |
| A. EMISSION DATA SUMMARY | ACCOCIATED ITEMS | CONC. COMO. | POULTS 63 | PARTITION NO. | 000 6001164 | | | | | |
| A. EMISSION DATA SUMMARY | ASSOCIATED HEIMS. | COMG1, COMG1 | e, edolies, | EQUITES, MR | 029, STRU64 | - | | | | |
| A. EMISSION DATA SUMMARY DURATION OF EXCESS EMISSIONS (HRS) 1 | | | | | | т | OTAL O | PERATING H | IOURS | |
| DURATION OF EXCESS EMISSIONS (HRS) 1 | | | | | | C | F EMIS | SION UNIT: | | 1788 |
| 1 Ib/hr Ib/mmtbu SOURCE OPERATION (HRS) Fuel Gas | A. EMISSION DATA SUMMA | RY | | | | B. CEM P | erform | nce Summ | ary | |
| a) Startup/Shutdown b) Control equipment c) 0.00 0.00 a) Monitor malfunction 0.00 c) Process problems 0.00 0.00 b) Non-monitor malfunction 0.00 d) Other known causes 0.00 0.00 d) Other known causes 0.00 0.00 d) Other known causes 0.00 0.00 d) Other known causes 0.00 0.00 d) Other known causes 0.00 0.00 d) Other known causes 0.00 0.00 d) Other known causes 0.00 0.00 d) Other known causes 0.00 0.00 d) Other known causes 0.00 0.00 d) Other known causes | DURATION OF EXC | ESS EMISSIONS | (HRS) | | | 1 0 | URATIC | N OF CEM | OOWNTIME | DURING |
| th) Control equipment 0.00 0.00 a) Monitor malfunction 0.00 0.00 c) Process problems 0.00 0.00 b) Non-monitor malfunction 0.00 0.00 d) Older known causes 0.00 0.00 d) Other known causes 0.00 0.00 d) Other known causes 0.00 0.00 d) Other known causes 0.00 0.00 g) Fuel problems 0.00 0.00 0.00 e) Unknown causes 0.00 0.00 g) Fuel problems 0.00 0.00 0.00 d) Other known causes 0.00 0.00 g) Fuel problems 0.00 0.00 0.00 2 TOTAL DURATION (HRS) 0.00 0.00 2 TOTAL DURATION (HRS) 0.00 0.00 2 TOTAL DURATION (HRS) 0.00 0.00 2 TOTAL DURATION (HRS) 0.00 0.00 0.00 2 TOTAL DURATION (HRS) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0. | 1 | | | lb/hr | lb/mmtbu | s | OURCE | OPERATION | V (HRS) | |
| c) Process problems d) Other known causes 0.00 0.00 c) CA calibration 0.00 e) Unknown causes 0.00 0.00 d) Other known causes 0.00 0.00 d) Other known causes 0.00 0.00 e) Unknown causes 0.00 0.00 e) | | | | - | | - | | | | |
| d) Other known causes e) Unknown . , | | | | | 1 | • | | | |
| e) Unknown causes f) Soot blowing g) Fuel problems 2 TOTAL DURATION (HRS) 3 PERCENT OF TOTAL EXCESS EMISSIONS FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. **Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) **Total CEM Downtime = CEM Downtime / Total Operating Time **NOTES: | · · | | | | | 7 | • | | clion | |
| 1) Soot blowing 0.00 0.00 0.00 e) Unknown causes 0.00 0.00 0.00 2 TOTAL DURATION (HRS) 0.00 0.00 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00\$ 0.00\$ 2 TOTAL DURATION (HRS) 0.00\$ 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00\$ CEM DOWNTIME 0.00\$ FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. **Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) **Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: | | ies | | | | 7 | • | | _ | |
| g) Fuel problems 2 TOTAL DURATION (HRS) 3 PERCENT OF TOTAL EXCESS EMISSIONS D.00\$ D.00\$ D.00\$ TOTAL DURATION (HRS) 3 PERCENT OF TOTAL EXCESS EMISSIONS D.00\$ FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. **Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during | • | | | | | -1 | • | | S | |
| 2 TOTAL DURATION (HRS) 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00\$ 0.00\$ 0.00\$ CEM DOWNTIME 0.00\$ FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. **Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) **Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during | · | | | | | - |) Unkno | mi causes | | 0.00 |
| 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00% 0.00% CEM DOWNTIME 0.00% FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. **Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) **Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: **If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during | | (UDE) | | | | | OTAL D | LIDATIONAL | 001 | |
| EXCESS EMISSIONS O.00% O.00% O.00% CEM DOWNTIME O.00% FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. % Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) % Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during | l ' | - | | 0.00 | 0.00 | 4 | | • | • | 0.00 |
| % Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) % Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during | | | | 0.00% | 0.00% | 1 | | | | 0.00% |
| % Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) % Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during | | | | | | <u></u> | | | | |
| % Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during | | FOR OPACITY, | RECORD ALL | TIMES IN MIN | UTES, FOR G | ASES, REC | ORD A | LL TIMES IN | HOURS. | |
| NOTES: If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during | % Total Excess Emissions = | | Total Duratio | on of Excess Em | nissions / (Total | Operating | Time - C | EM Downtim | e) | |
| | | | CEM Downti | me / Total Oper | rating Time | | | | | |
| | | | | | | | | | | |
| | | | - :- | | | | | | | |
| | | | | | | | • | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

See certification page at front of report

SUBMITTED BY:

| REPORTING QUARTER: | | Fourth, 2016 | | AQD FILE #: #0203 (AI ID 447) |
|---|----------------------------|-----------------------|-------------------------|-------------------------------|
| EMISSION UNIT(S): | | Heater 34-B-1 | | _ |
| POLLUTANT MONITORED: | | \$02 lb/hr | · | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shutdown 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | | |
| b) Control equipment 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions, | | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0,00 | _No excess emissions. | | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions, | | |
| f) Soot blowing 10/1/2016 1/1/2017 | 0.00 | No excess emissions. | | |
| g) Fuel problems 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions, | | |

| REPORTING QUARTER: | | Fourth, 2016 | | AQD FILE # #0203 (AI ID 447) |
|---|----------------------------|------------------------|-------------------------|------------------------------|
| EMISSION UNIT(S): | | Heater 34-B-1 | | - |
| POLLUTANT MONITORED: | | SO2 lb/mmbtu | | |
| · DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION | |
| - DAI BIIME | (nko) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | | | |
| b) Control equipment 10/1/2016 1/1/2017 | | _ No excess emissions. | | |
| Total | 0.00 | | | |
| c) Process problems 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | | |
| d) Other known causes 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | | |
| e) Unknown causes 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | | |
| f) Soot blowing 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | | |
| g) Fuel problems 10/1/2016 1/1/2017 _ Total | 0.00 | _ No excess emissions. | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|----------------------------|----------------------------|-------------------------|-------------------------------|
| EMISSION UNIT(S): | | Heater 34-B-1 | |
| POLLUTANT MONITORED: | | Fuel Gas Flow Rate | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | |
| a) Monitor malfunction | | | |
| Total | 0.00 | _ | |
| b) Non-monitor malfunction | | | |
| Total | 0.00 | _ | |
| c) QA calibration | | | • |
| Total | 0.00 | _ | |
| d) Other known causes | | | |
| Total | 0.00 | _ | |
| e) Unknown causes | | | |
| Total | 0.00 | _ | |

AQD FILE #: #0203 (AT TD 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 | NOx | CO | CO2 | 02 | TRS | H2S | HCL | Opacity | |
|-----------------------------------|------------------|----------------|----------------|------------------|-----------------|-------------|---|----------------|-------------------|----------------|
| | Other) | Flow | | - | | _ | | | | |
| REPORTING QUARTER: | Fourth, 20 | 116 | | _ | MODEL: | | Fuel Gas | : Flow Rat | e/FG H2S CEM | |
| FACILITY: | | | | | MFR: | | | | | |
| St. Paul Park F | efining Co | LLC | | | MIFK: | | | | | |
| 0011101111111 | | | | - | | | | | | |
| | | | <u> </u> | - | EMISSIC | ON LIMIT | AND AVER | AGE TIME: | • | |
| EMISSION SUBJECT ITEM: | EQUI13 | | | _ | _ | 76.50 1 | b S02/hr | - 3 hour | rolling avera | g <u>e</u> |
| | | | | | - | 0.90 lb | SO2/mmbt | tu - 3 hou | r rolling ave | rage |
| EMISSION UNIT(S): | Hot Oil He | ater | | _ | EMISSIC | ON BASIS | i : | SIP for S | 02 NAAQS | |
| | Heater 34- | B-2 | | | | | | | | |
| ASSOCIATED ITEMS: | COMG7. COM | IG14. EOUI1 | 63, EQU1190 | . EOUI191. | STRU64 | | | | | |
| | | | | | | | | | _ | |
| | | | | | OPERA | TING HO | JRS OF EM | IISSION UNI | | |
| | | | | | | | | Total 1896 | Fuel Gas 1896 | Fuel Oil |
| | | • | | | | | • | 1076 | 1436 | 0 |
| A. EMISSION DATA SUMMA | RY | | | - | B. CEM | Performa | ınce Summ | ary | | |
| DURATION OF EXC | ESS EMISSIC | NS (HRS) | | | 1 | DURATIO | N OF CEM | DOWNTIME | DURING | |
| 1 | | | lb/hr | lb/mmbtu | | SOURCE | OPERATIO | ON (HRS) | | |
| a) Startup/Shutdown | | | 0.00 | 0.00 | 4 | | | | Fuel Gas | Fuel Oil |
| b) Control equipmen | | | 0.00 | 0.00 | 7 | • | r malfunctio | | 0.00 | 0.00 |
| c) Process problems | | | 0.00 | 0.00 | 4 | • | onitor malfu | inction | 0.00 | 0.00 |
| d) Other known caus | ses | | 0.00 | 0.00 | - | c) QA cal | | | 0.00 | 0.00 |
| e) Unknown causes f) Soot blowing | | | 0.00 | 0.00 | 4 | • | known caus | es | 0.00 | 0.00 |
| g) Fuel problems | | | 0.00 | 0.00 | 1 | e) Unkno | wn causes | | 0.00 | 0.00 |
| 2 TOTAL DURATION | (HDC) | | | 0.00 | ١ , | TOTAL D | UDATION (| NDC/ | | |
| 3 PERCENT OF TOTAL | • | | 0.00 | 0.00 | 1 | | URATION (T OF TOTA | | 0.00 | 0.00 |
| EXCESS EMISSION | | | 0.00% | 0.00% | 1 | CEM DO | | · - | 0.00% | 0.00% |
| | FOR OPACIT | Y RECORD A | ALL TIMES IN A | MINUTES FOR | CASES | RECOR | DALL TIME | S IN HOURS | | |
| L | 1011011011 | 1,112001101 | 100 11111 | | (0/1020 | , ILCOIN | - ACE THAT | .0 114 110 010 | · | |
| % Total Excess Emissions = | | Total Duration | n of Excess Em | issions / (Total | Operation | a Time - (| CEM Downti | ime) | | |
| 75 10101 270000 27710000 | | | | | Operatin | g | , | | | |
| NOTES: There was zero | fuel oil ru | intime duri | ng the quar | ter. | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| If no exceedances: I certify the | nat the required | analyses wer | e made, that I | am famillar with | the resul | lts, and th | at to the be | st of my knov | vledge there were | no exceedances |
| during the reporting period. I | | | | | | | | | | |
| SUBMITTED BY: | See certif | ication pag | ge at front | of report | | | _ | DATE: | | |

| REPORTING QUARTER: | | Fourth, 2016 | | AQD FILE #: #0203 (AI ID 447) |
|---|----------------------------|-----------------------|-------------------------|-------------------------------|
| EMISSION UNIT(S): | | Heater 34-B-2 | | - |
| POLLUTANT MONITORED: | | SO2 lb/hr | | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION | |
| DATE/TIME | (///) | NO CONTRACTOR | CABOD COMMEDIATE ACTION | |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | | | |
| b) Control equipment 10/1/2016 1/1/2017 | 0.00 | _No excess emissions. | | |
| Total | 0.00 | | | |
| c) Process problems 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | |
| e) Unknown causes 10/1/2016 1/1/2017 _ Total | 0,00 | _No excess emissions. | | |
| f) Soot blowing 10/1/2016 1/1/2017 _ Total | 0,00 | _No excess emissions, | | |
| g) Fuel problems 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | | |

| REPORTING QUARTER: | | Fourth, 2016 | · · · | AGD FILE #: #0203 (AT ID 447) |
|---|----------------------------|-----------------------|-------------------------|-------------------------------|
| EMISSION UNIT(S): | | Heater 34-B-2 | | - |
| POLLUTANT MONITORED: | | SO2 lb/mmbtu | | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shutdown 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | |
| b) Control equipment 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | | |
| f) Soot blowing 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | | |
| g) Fuel problems 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQDF/LE#: #0203 (AI ID 447) | |
|----------------------------|-----------------------------|-------------------------|---|--|
| EMISSION UNIT(S): | | Heater 34-B-2 | *************************************** | |
| POLLUTANT MONITORED: | | Fuel Gas Flow Rate | _ | |
| DATE/TIME | TOTAL DURATION (HR\$) | CAUSE/CORRECTIVE ACTION | | |
| a) Monitor malfunction- | | | | |
| Total | 0,00 | - | | |
| b) Non-monitor malfunction | | | | |
| Total | 0.00 | | | |
| c) QA calibration Total | 0:00 | | | |
| d) Other known causes | | | | |
| Total | 0.00 | | | |
| e) Unknown causes | 0.00 | $x \rightarrow y$ | | |

| REPORTING QUARTER: | | Fourth, 2016 | | AQD FILE #: #020 | 03 (AI ID 447) | |
|----------------------------|----------------------------|---------------------------------------|-------------|------------------|----------------|--|
| EMISSION UNIT(S): | | Heater 34-B-2 | | | | |
| POLLUTANT MONITORED: | | Fuel Oil Flow Rate | | | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | | | | |
| a) Monitor malfunction: | 0:00 | · · · · · · · · · · · · · · · · · · · | | . • | | |
| b) Non-monitor malfunction | | | | | | |
| Total | 0.00 | - | | • | | |
| c) QA calibration | 0.00 | | | | | |
| d) Other known causes | | | | | | |
| Total | 0.00 | | | | | |
| e) Unknown causes Total | 0.00 | | | | | |

AQD FILE #: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 Other: | NOx | со | CO2 | (O2) | TRS | H2S | HCL | Opacity |
|--|------------------|----------------|------------|---------|------------|-----------|--------------|------------|---|
| REPORTING QUARTER: | Fourth, 20 | . c | | | MONIT | | | | |
| REPORTING QUARTER. | Fourth, 20 | 16 | | - | | | ce Optio | na Limas | 11 |
| FACILITY: | | | | | MOGET | . Auvar | ice opean | 102 DIWGS | |
| St. Paul Park Re | efining Co. | LLC | | | | | | | |
| | | | | - | EMISS | ION LIMI | T AND AVE | ERAGE TIM | 1E: |
| | | | | - | 0 | .050 1 | bs/mmbtu | - 365 da | y rolling average |
| EMISSION SUBJECT ITEM | EOUI14 | | | | - | | | | effective 10/17/08 |
| | | | | - | - | ION BAS | | | |
| EMISSION UNIT(S): | Heater 32- | B-1 | • | | | | Decree | | |
| • • | | | | _ | _ | | | | |
| ASSOCIATED ITEMS: | | <u> </u> | | | | | | | |
| | | | | | | | | | |
| | | | | | TOTAL | . OPERA | TING HOU | RS | |
| | | | | | OF EM | ISSION I | JNIT: _ | 1628 | _ |
| A. EMISSION DATA SUMM | ADV | | | | B CEN | A DEGE | DMANCE | SUMMARY | <u> </u> |
| 1 DURATION OF EXC | | S (HDS) | | | D. OLI | HENC | MINANUL | SUMMERIC | · |
| I DONATION OF LAG | LOG LIVIIODIOIV | 365 day | | | 1 1 1 | HRATIO | N OF CEM | | ME DURING |
| a) Startup/Shutdown | | 0.00 | | | | | OPERATION | | NE BOKING |
| b) Control equipment | | 0.00 | | | | | malfunctio | | 0.00 |
| c) Process problems | | 0.00 | | | | • | onitor malfu | | 0.00 |
| d) Other known cause | a r | 0.00 | | | |) QA cali | | ПОВОП | 1.00 |
| i ' | 33 | | | | | , | nown caus | | 52.00 |
| e) Unknown causes | 0.00 | | | | • | vn causes | 62 | 0.00 | |
| f) Soot blowing | | 0.00 | | | " |) GIRIO | WII Causes | | 0.00 |
| g) Fuel problems | une) | | | | ١,,, | OTAL D | LED ATIONS | (HOC) | 53.00 |
| 2 TOTAL DURATION (| • | 0.00 | | | | | URATION (| | 53.00 |
| 3 PERCENT OF TOTA | | | | | 1 | | T OF TOTA | AL. | |
| EXCESS EMISSIONS | 5 | 0.00% | | | (| EM DO | WHIME | | 3.26% |
| | FOR OPACIT | Y, RECORD A | LL TIMES | IN MI | NUTES. | FOR GA | ASES, REC | ORD ALL 1 | TIMES IN HOURS. |
| | | | | | | | | 2544.5 | |
| % Total Excess Emissions = | | Total Duration | 1 of Exces | is Emi | ssions / (| lotal Op | erating (im | ie - CEM D | owntime) |
| % Total CEM Downtime = | | CEM Downtin | ne / Total | Opera | ting Time | е | | | |
| NOTES: | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| no exceedances during the r information is valid. | eporting period. | | am familia | er with | the infor | mation in | this report | | best of my knowledge there were the best of my knowledge the |
| SUBMITTED BY: | PRE CELCIT | rearrow bag | e ar II | 011C C | 'r rebo | | _ | DATE | |

| REPORTING QUARTER: | | Fourth, 2016 | | AQD FILE #: #0203 | (AI ID 447) |
|---|----------|-----------------------|-----------------|---------------------------------------|-------------|
| EMISSION UNIT(S): | | Heater 32-B-1 (EQ | UI14} | · · · · · · · · · · · · · · · · · · · | |
| POLLUTANT MONITORED: | | NOx (365 day roll | ing avg) and 02 | | |
| DATE/TIME | DURATION | CONCENTRATION | CAUSE/CORRECT! | VE ACTION | |
| a) Startup/Shutdown 10/1/2016 | | M | | | |
| 1/1/2017 _ Total | 0.00 | No excess emissions. | | | |
| b) Control equipment 10/1/2016 1/1/2017 | | No excess emissions. | | | |
| Total | 0,00 | | | | |
| c) Process problems 10/1/2016 1/1/2017 | | No excess emissions. | | | |
| Total | 0.00 | 110 excess emissions. | | | |
| d) Other known causes 10/1/2016 1/1/2017 _ | | No excess emissions. | | | |
| Total | 0.00 | | | | |
| e) Unknown causes 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | | | |
| | | | | | |
| f) Spot blowing 10/1/2016 1/1/2017 | | No excess emissions. | | | |
| Total | 0.00 | | | | |
| g) Fuel problems 10/1/2016 1/1/2017 _ | | No excess emissions. | | | |
| Total | 0,00 | | | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #02 | 03 (AI ID 447) | |
|---|----------------------------|-------------------------------------|-----------------|----------------|--|
| EMISSION UNIT(S): | | Heater 32-B-1 (EQUI14) | | | |
| POLLUTANT MONITORED: | | NOx and O2 | | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | | | |
| a) Monitor malfunction. | 0.00 | | | | |
| b) Non-monitor malfunction | | | | | |
| Total | 0.00 | - | | | |
| c) QA calibration 11/8/2016 13:00 11/8/2016 14:00 Total | 1,00 | ¿Quarteny calibration gas audit | | A second | |
| d) Other known causes | | | | | |
| 10/26/2016 12:00 10/26/2016 14:00 11/29/2016 7:00 | 2.00 | Missing data. Data communications i | ssue. | | |
| 12/1/2016 9:00 Total | 50.00 52.00 | Missing data Data communications is | ssues. | | |
| e):Unknown.causes# | (0.00 | | | | |

AQD FILE #: #0203 (AI ID 447)

DATE:

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 | NOx | co | CO2 | 02 | TRS | H2S | HCL | Opacity |
|---|------------------|-----------------|----------------|------------------|--|-----------|----------------------------------|--------------|-----------------------------------|
| | Other: | Flow | | | | | | | |
| | | | | - | MONITOR | | | | |
| REPORTING QUARTER; | Fourth, 2016 | | | _ | MODEL: | | Fuel Gas | Flow Rate/ | FG H2S CRM |
| FACILITY: | | | | | MFR: _ | | | | |
| St. Paul Park Re | tining Co. LL | 2 | | _ | | | | | |
| | · | | | - | | | | | |
| | | | | | | | ND AVERAG | | |
| EMISSION SUBJECT ITEM: | EQUI14 | | | - | | | <u>- 3 hour :</u> mbtu - 3 ho | | |
| | | | | | | | | | g average Effective 9-10-2009) |
| EMISSION UNIT(S): | HDH Heater | | | | LIMIGGION | 1 01015. | SIF IOI 3 | OZ MANOS (| Effective 9-10-20097 |
| Elinoolole blart(o). | 32-B-1 | | | - | | | | | |
| | | | | _ | | | | | |
| ASSOCIATED ITEMS: | | | | | | | | | |
| COMG7, COMG14. E | QUI163. EQUI1 | 92, STRU63 | | _ | | | | | |
| | | | | _ | | | | | |
| | | | | | TOTAL OF | PERATIN | IG HOURS | | |
| | | | | | OF EMISS | NU NOE | IT: | 1628 | - |
| A PAUGOIGN DATA QUARIA | | | | | D CELLO | | C | | |
| A. EMISSION DATA SUMMAI DURATION OF EXCI | | /UDE\ | | | • | | nce Summar ON OF CEM I | | DUDING |
| 1 | LOG EMIGGIONS | (CINO) | lb/hr | lb/mmbtu | 1 | | OPERATION | | DURING |
| a) Startup/Shutdown | | | 0.00 | 0.00 | • | 300,00 | - OF ENAMOR | · (rano) | Fuel Gas |
| b) Control equipment | | | 0.00 | 0.00 | 1 ، | a) Monito | or malfunction | | 0.00 |
| c) Process problems | | | 0.00 | 0.00 | 4 | • | onitor mattun | | 0.00 |
| d) Other known caus | es | | 0.00 | 0.00 |] (|) QA ca | libration | | 0.00 |
| e) Unknown causes | | | 0.00 | 0.00 |] (| d) Other | known cause: | s | 0.00 |
| f) Soot blowing | | | 0.00 | 0.00 |] ' | e) Unkno | wn causes | | 0.00 |
| g) Fuel problems | | | 0.00 | 0.00 | | | | | |
| 2 TOTAL DURATION (| | | 0.00 | 0.00 | 7 | | OURATION (H | • | 0.00 |
| 3 PERCENT OF TOTAL | | | | | | | IT OF TOTAL | | |
| EXCESS EMISSION | S | | 0.00% | 0.00% | - ' | CEM DQ | WNTIME | | 0.00% |
| | | | | | | | | | |
| | FOR OPACITY, | RECORD ALI | TIMES IN MI | NUTES, FOR | GASES, RE | CORD | ALL TIMES IN | HOURS. | |
| | | | | | | | | | |
| % Total Excess Emissions = | | Total Duratio | n of Excess Er | nissions / (Tota | al Operating | Time - 0 | CEM Downtim | le) | |
| NOTES: | | | | | | | | | |
| | | | | | | | | | |
| | | | ** | | | | | ****** | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | there were no exceedances during |
| the reporting period. I certify t | nari smramitar v | nın the intorma | mon in mis teb | on and mat to | ine pest of I | тту клож | ueoge me mic | rmanon is va | AIQ. |

See certification page at front of report

SUBMITTED BY:

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|---|----------------------------|--|-------------------------------|
| EMISSION UNIT(S): | | 32-B-1 | |
| POLLUTANT MONITORED: | | 502 lb/hr | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCENTRATION CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shutdown 10/1/2016 1/1/2017 _ Total | 0,00 | _No excess emissions. | |
| b) Control equipment 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | |
| c) Process problems 10/1/2016 1/1/2017 _ Total | 0.00 | _ No excess emissions. | |
| d) Other known causes 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | |
| e) Unknown causes 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | |
| f) Soot blowing 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | |
| g) Fuel problems 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | |

| REPORTING QUARTER: | | Pourth, 2016 | · | AQD FILE #: #0203 (AI ID | 447) |
|---|----------------------------|------------------------|-------------------------|--------------------------|------|
| EMISSION UNIT(S): | | 32-B-1 | | | |
| POLLUTANT MONITORED: | | SO2 lb/mmbtu | | | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION | | |
| a) Startup/Shutdown 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | | | |
| b) Control equipment 10/1/2016 1/1/2017 _ Total | 0,00 | _No excess emissions. | | | |
| c) Process problems 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | | | |
| d) Other known causes 10/1/2016 1/1/2017 _ Total | 0.00 | _ No excess emissions. | | | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | | | |
| n Soot blowing 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | | | |
| g) Fuel problems 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | | | |

| REPORTING QUARTER: | | Fourth, 2016 | | AQD FILE #: #0203 (A) | ID 447) |
|----------------------------|----------------------------|-------------------|----------|-----------------------|---------|
| EMISSION UNIT(S): | | Heater 32-B-1 | | | |
| POLLUTANT MONITORED: | | Fuel Gas Flow Ray | te | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIV | E ACTION | | |
| a) Monitor malfunction | 0:00 | | | | |
| b) Non-monitor malfunction | | | | | |
| Total | 0.00 | _ | | | |
| c)IQA (calibration) | 10.00 | | | | |
| d) Other known causes | • | | | | |
| Tota! | 0.00 | _ | | | |
| e) Unknown causes | 77.00.001 | | | | |

AQD FILE#: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 NOx Other: Flow | CO | CO2 | O2 | TRS | H2S | HCL | Opacity | |
|---|---|----------------|-----------------|----------------|--------------|--------------------------------|----------|------------------|------------------|
| EPORTING QUARTER: | | | . | MONITOR | | Evol Coo E |) De | to/DG Was GB | ** |
| FORTING QUARTER. | Fourth, 2016 | • • • | - | WODEL. | • | Fuel Gas F | TOM KA | te/FG H2S CE | М |
| ACILITY: | | | | MFR: | · | | | | |
| St. Paul Park | Refining Co. LLC | | - | | | | | | |
| | | | - | EMISSION | L IMIT A | ND AVERAGE | TIME | | |
| MISSION SUBJECT ITEM: | EQUI15 | | _ | | | | | rolling aver | rage |
| | | | = | 0 | .90 lb | SO2/mmbtu | - 3 hc | our rolling a | verage |
| MISSION UNIT(S): | Dehex Reboiler Heat | er | - | | | | | | |
| | Heater 10-B-1 | | _ | EMISSION | BASIS: | SI | P for | SO2 NAAQS | |
| SSOCIATED ITEMS: | COMG7, COMG14, EQUI | 163, EQUI1 | 93, EQUI19 | 4, STRU9 | | | | | |
| | | | | | | | | | |
| | | | | OPERATII | NG HOU | RS OF EMISS | | | |
| | | | | | | | Potal | Fuel Gas 2209 | Fuel Oil 0 |
| | | | | | | . — | 2209 | 2209 | <u> </u> |
| EMISSION DATA SUMMA | RY | | | B. CEM P | erformai | nce Summary | | | |
| | CESS EMISSIONS (HRS) | | | | | N OF CEM DO | | E DURING | |
| 1 | | lb/hr | lb/mmbtu | S | OURCE | OPERATION | (HRS) | | |
| a) Startup/Shuldown | | 0.00 | 0.00 | ۱ " | Manitor | mattenation | | Fuel Gas | Fuel Oil |
| b) Control equipmerc) Process problems | | 0.00 | 0.00 | | , | malfunction onitor malfunct | ion | 0.00 | 0.00 |
| d) Other known caus | | 0.00 | 0.00 | -1 · · · · · · | QA cali | | 1011 | 0.00 | 0.00 |
| e) Unknown causes | | 0.00 | 0.00 | -f ' | | nown causes | | 0.00 | 0.00 |
| f) Soot blowing | | 0.00 | 0.00 | - ' | | vn causes | | 0.00 | 0.00 |
| g) Fuel problems | | 0.00 | 0.00 |] | | | | | |
| 2 TOTAL DURATION | (HRS) | 0.00 | 0.00 | 2 T | OTAL DI | URATION (HR | S) | 0.00 | 0.00 |
| 3 PERCENT OF TOT | AL | | | 3 P | ERCENT | OF TOTAL | | | |
| EXCESS EMISSION | S | 0.00% | 0.00% | _ c | EM DOV | VNTIME | | 0.00% | 0.00% |
| | | | | 1 | | | | | |
| | FOR OPACITY, RECORD | ALL TIMES IN | MINUTES. F | OR GASES | RECO | RD ALL TIMES | IN HOL | IRS. | |
| | | | | _ | • | | | | |
| Total Excess Emissions = | Total Duration | on of Excess i | Emissions / (T | otal Operati | ng Time | - CEM Downti | me) | | |
| OTES: There was zero | fuel oil runtime dur | ing the qu | uarter. | | | | | | |
| | | | | | | <u> </u> | | | |
| | | | | | | | | · · | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| no exceedances: I certify the | at the required analyses wer rting period. I certify that I an | e made, that I | l am familiar w | ith the resul | its, and the | hat to the best | of my kn | owledge there w | ere no |
| | | | | | UIT BNOT | | - | owieage the into | irmation is vali |
| UBMITTED BY: | See certification p | age at fro | nt of repo | rt | | D.A | TE: | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQDFILE#: #0203 (AI ID 447) |
|-----------------------|-------------------|--|-----------------------------|
| EMISSION UNIT(S): | | Heater 10-B-1 | - |
| POLLUTANT MONITORED: | | SO2 lb/hr | |
| | TOTAL DURATION | | |
| DATE/TIME | (HR\$) | MAX. CONCENTRATION CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shutdown | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| b) Control equipment | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0,00 | | |
| c) Process problems | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| | | | |
| d) Other known causes | | | |
| 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | 140 EXCESS CHIISSIONS. | |
| | | | |
| e) Unknown causes | | | |
| 10/1/2016 | | Ma aurana aminaina | |
| 1/1/2017 | 0.00 | _No excess emissions. | |
| Total | 0.00 | | |
| n Soot blowing | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | • | |
| g) Fuel problems | | | |
| 10/1/2018 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | The mineral contraction | |
| | | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|-----------------------|----------|--|-------------------------------|
| EMISSION UNIT(S): | | Heater 10-B-1 | _ |
| POLLUTANT MONITORED: | | SO2 1b/mmbtu | |
| | TOTAL | | |
| | DURATION | | |
| DATE/TIME | (HRS) | MAX. CONCENTRATION CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shutdown | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.0D | | |
| h. O | | | |
| b) Control equipment | | | |
| 10/1/2016 | | M | |
| 1/1/2017 | 0.00 | No excess emissions. | |
| Total | 0.00 | | |
| c) Process problems | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| d) Other known causes | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | THE EACESS ETHISSIONS. | |
| | | | |
| e) Unknown causes | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| f) Soot blowing | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| g) Fuel problems | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | TO CACCAS CITINGSIONS. | |
| 1 4 44. | -, | | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Fourth, 2016 | - | AQD FILE#: #0203 (A | I ID 447) | |
|----------------------------|---------------------------|-------------------------|---|--|--|-----|
| EMISSION UNIT(S): | | Heater 10-B-1 | | | | |
| POLLUTANT MONITORED: | | Fuel Gas Flow Rate | | | | |
| DU | TOTAL JRATION (HRS) | CAUSE/CORRECTIVE ACTION | | | | |
| a) Monitor malfunction | 20.00 | | 37 27 - 17 - 17 - 17 - 17 - 17 - 17 - 17 - | To a fire | P. Carlot | |
| b) Non-monitor malfunction | | | | | | |
| Total | 0.00 | | | | | |
| c) (QA calibration | 0.00 | | N. Carlotte | | | 700 |
| d) Other known causes | | | | | | |
| Total | 0.00 | | | | | |
| e) Unknown causes | 0.00 | | | And the second s | A STATE OF THE STA | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE#: | #0203 (AI ID 447) |
|----------------------------|----------------------------|-------------------------|------------|-------------------|
| EMISSION UNIT(S): | | Heater 10-B-1 | | |
| POLLUTANT MONITORED: | | Fuel Oil Flow Rate | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | | |
| a) Monitor malfunction | VO:00 | | | |
| b) Non-monitor malfunction | | | | |
| Total | 0.00 | • . | | |
| c) QA calibration (| 0.00 | | | |
| d) Other known causes | | | | |
| Total | 0.00 | | | |
| e) Unknownicauses; | S-0.00 | | | |

AQDFILE#: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | (soz) | NOx | CO f | 02 02 | TRS | H2S | HCL | Opacity | |
|--|-------------------------------------|-------------|-----------------|----------------|--------------|---------------------------------------|-----------------|----------------------|---|
| | Other: | SO2 also | a surroga | te for MACT | Subpart | UUU KA | P Emissions | _ | |
| REPORTING QUARTER: | Fourth, 20 | 16 | | | | | MONITOR | Advance Limas 1 | |
| | | | | | | | MODEL: | Magnos 106 - 02 | |
| FACILITY: | | | | | | | LICH. | | |
| St. Paul Park Re | rining Co. 1 | LLC . | | | | | MFR: | ABB | - |
| EMISSION SUBJECT ITEM: | EQUI000000 | 0016 | | | | | EMISSION LI | MIT AND AVERAGE | ПМЕ: |
| | | | | | | | | 250 ppm SO2 - 1 | 2 hour rolling average |
| EMICCION HINTERS | #2 SRU/SCO | Tubit | | | | | | | |
| EMISSION UNIT(S): | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | | | | | EMISSION B | ASIS: | |
| | | | | | | | | SPS Subpart J | |
| ASSOCIATED ITEMS: | TREA12, CO | MG8, EQUI | 166, EQUI1 | 57, STRU81 | | | • | | la MACT Subpart UUU |
| | | | | | | | | | , _ |
| PROCESS UNIT DESCRIPTION | ON: | | _ | | | | ail Gas Tres | | |
| | | The train | n includes (| he SRU Inci | nerator. | The su | lfor wit in | designed to proce | ens 50 LTPD. |
| | | | | | TOTAL OF | PERATING | 3 HOURS | | |
| | | | | | OF EMISS | | | 1552 | |
| | | | | | | | | | |
| A. EMISSION DATA SUMMAR | ęy | | | B. CEM | PERFORM | AANCE S | UMMARY | | C. SRU BYPASS INFORMATION |
| | -00 | | | | | . | | -110410 | |
| 1 DURATION OF EXCE | ESS EMISSION | IS (HRS) | | | | | M DOWNTIME | DURING | 1 DURATION OF BYPASS |
| a) Startup/Shutdown b) Control equipment | | - | 0.00 | I | a) Monitor | | ON (HRS) | 0.00 | a) Process Problems 0.00 b) Other known causes 0.00 |
| c) Process problems | | - | 0.00 | | b) Non-mo | | | 0.00 | c) Unknown causes 0.00 |
| d) Other known cause | 22 | - | 0.00 | | c) QA call | | | 1.00 | 5, 61,111,111 |
| e) Unknown causes | | _ | 0.00 | | d) Other ka | | ses | 0.00 | 2 TOTAL DURATION (HRS) 0.00 |
| f) Soot blowing | | _ | 0.00 | | e) Unknow | | | 0.00 | 3 PERCENT OF TOTAL |
| g) Fuel problems | | | 0.00 | | | | | | OPERATION HOURS 0.00% |
| 2 TOTAL DURATION (| HRS) | _ | 0.00 | 2 | TOTAL DI | JRATION | (HRS) | 1.00 | |
| 3 PERCENT OF TOTAL | L | | | 3 | PERCENT | OF TOT | AL. | | |
| EXCESS EMISSIONS | 3 | - | 0.00% | ' | CEM DOV | VNTIME | | 0.06% | |
| | FOR OPACIT | Y, RECOR | D ALL TIMES | IN MINUTES. | FOR GAS | SES, REC | ORD ALL TIM | ES IN HOURS. | - |
| % Total Excess Emissions | | Total Dura | lion of Excess | Emissions / () | Total Open | atino Time | e - CEM Down | time) | |
| % Total CEM Downtime = | | | | perating Time | | | | ····· • | |
| | | | | perawig rime | | | | | |
| NOTES: Actual monitored valu | | | | | | · · · · · · · · · · · · · · · · · · · | - 44 | | |
| data points are not ve | | | | | | | | ny analyzer readings | over that value since measured |
| data points are not ve | made of accor | ate when at | neast anne die | ater man me r | iigii canora | acon gas c | concentration. | | |
| | | ~ | | | | | | | |
| If no exceedances: I certify that | it the required a | nalyses we | re made, that I | am familiar wi | th the resi | uits, and ti | hat to the best | of my knowledge | |
| there were no exceedances du knowledge the information is va | ring the reportir | | | | | | | | |
| SUBMITTED BY: | See certif | ication p | age at from | nt of repor | t | | DATE: | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE # #0203 (AI ID 447) |
|---|----------------------------|--|------------------------------|
| EMISSION UNIT(S): | | #2 SRU/SCOT unit | |
| POLLUTANT MONITORED: | | SO2 (ppm) | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCEN. (ppm, 12-hr average) and recalc | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown a) Startup/Shutdown 10/1/2016 1/1/2017 _ | | No excess emissions. | |
| Total | 0.00 | - | |
| b) Control equipment 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| c) Process problems 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | |
| d) Other known causes | | | |
| Total _ | 0.00 | No excess emissions. | |
| e) Unknown causes 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | |
| f) Soot blowing 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | |
| g) Fuel problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Fourth, 2016 AQDFILE# #0203 (AI ID 447) |
|--|----------------------------|---|
| EMISSION UNIT(S): | | #2 SRU/SCOT unit |
| POLLUTANT MONITORED: | | 502 |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION |
| a) Monitor malfunction | 0.00 | |
| b) Non-monitor malfunction | | |
| Total | 0.00 | |
| c) OA calibration Track 1400 Mrs/161400 Mrs/161600 | 1/00 1/00 | Quarterly CGA 1 |
| d) Other known causes | | |
| | | |
| Total | 0.00 | |
| e).Unknown causes | 0.00 | |

CONTINUOUS EMISSION MONITOR SRU BYPASS INFORMATION

| REPORTING QUARTER: | | Fourth, 2016 | AGD FILE #: #0203 | (AI ID 447) |
|-----------------------|-------------------|--|-------------------|-------------|
| EMISSION UNIT(S): | | #2 SRU/SCOT unit | _ | |
| POLLUTANT MONITORED | : | Bypass (Acid gas) | | |
| DATE CHAS | TOTAL DURATION | AMPENDODEGENE ACTION | | |
| DATE/TIME | (HRS) | CAUSE/CORRECTIVE ACTION | | |
| a) Process problems | | | | |
| 10/1/2 | | | | |
| 1/1/2 | 017 | No bypasses that resulted in excess emissions. | | |
| Total | 0.00 | | | |
| b) Other known causes | | | | |
| 10/1/2 | 016 | | | |
| 1/1/2 | 017 | No bypasses that resulted in excess emissions. | | |
| Total | 0.00 | | | |
| b) Unknown causes | | | | |
| 10/1/2 | 018 | | | |
| 1/1/2 | 017 | No bypasses that resulted in excess emissions. | | |
| Total | 0.00 | | | |

AQD FILE#: #0203 (AT ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 | NOx | co d | 02 02 | TRS H2S | HCL Opacity | | | |
|--|--------------------------|--|---------------------------------------|---------------------------------------|---------------------|---------------------------------------|--------|--|--|
| | Other: | | | | | | | | |
| | | | | MONITOR | Advance L | imas 11 502 | | | |
| REPORTING QUARTER: | Fourth, 2016 | | | MODEL: | Magnos 10 | 16 - 02 | | | |
| CAON IDA | | | | | | | | | |
| FACILITY: | | | | MFR: AE | 18 | | | | |
| St. Paul Park R | defining Co. LLC | | | | | | | | |
| | | | | EMISSION) | LIMIT AND AVERAG | E TIME: | | | |
| EMISSION SUBJECT ITEM | : EOUI16 | | | | .0 lb S02/hr - | | | | |
| | | | | | | 3 hour rolling average | | | |
| EMISSION UNIT(S): | #2 SRU/SCOT un | it | | | | | | | |
| | | | | EMISSION E | BASIS: MN Rule 7 | 7009.0020 - AAQS/SIP | | | |
| | | | | | | | | | |
| ASSOCIATED ITEMS: | TREA12, COMG8, | EQUI166, EQUI167, STRU14 | | | | | | | |
| | | | | TOTAL ORE | RATING HOURS | | | | |
| | | | | OF EMISSIO | | 1552 | | | |
| | | | | Or Elimobic | | | | | |
| A. EMISSION DATA SUMM | ARY | | | B. CEM PEI | RFORMANCE SUM | MARY | \neg | | |
| 1 DURATION OF EXC | CESS EMISSIONS (H | IRS) | | | | | \neg | | |
| | | 1 hr | 3 hr | 1 Di | URATION OF CEMI | DOWNTIME DURING | İ | | |
| a) Startup/Shutdowr | ۰ _ | 0.00 | 0.00 | so | DURCE OPERATION | N (HRS) | ŀ | | |
| b) Control equipmer | nl | 0.00 | 0,00 | a) | Monitor malfunction | 0.00 | } | | |
| c) Process problems | _ | 0.00 | 0.00 | | Non-monitor malfuni | ction | | | |
| d) Other known cau | _ | 0.00 | 0.00 | | QA calibration | 1.00 | l | | |
| e) Unknown causes | _ | 0.00 | 0.00 | | Other known causes | | - 1 | | |
| f) Soot blowing | - | 0.00 | 0.00 | e) | Unknown causes | 0.00 |] | | |
| g) Fuel problems | ##BC\ | | 0.00 | | | | | | |
| 2 TOTAL DURATION 3 PERCENT OF TOTAL | • • – | 0.00 | 0.00 | | OTAL DURATION (H | | 1 | | |
| EXCESS EMISSION | = | | | 3 PERCENT OF TOTAL CEM DOWNTIME 0.06% | | | | | |
| EXCESS EIVISSION | - | 0.00\$ | 0.00% | " | EW DOAAU IIWE | 0.06\$ | | | |
| | EOD ODACITY OF | CORD ALL TIMES IN MINUTES. FO | D CASED DECO | DO ALL TRACE | IN HOUSE | | | | |
| | FOR OFACILIT, RE | CORD ALL TIMES IN MINOTES. FC | N GASES, RECU | AU ALL TIMES I | IN HOURS. | | | | |
| % Total Excess Emissions = | Total Duration of I | Excess Emissions / (Total Operating T | ime - CEM Dounti | ma) | | | | | |
| | TOTAL COLLEGE OF | , , , | | ille) | | | | | |
| % Total CEM Downtime = | | CEM Downtime / Total Operating Tir | ne | | | | | | |
| | | | · · · · · · · · · · · · · · · · · · · | | | | | | |
| NOTE: | | | | | | · · · · · · · · · · · · · · · · · · · | | | |
| lh/hr SO2 CEM d | owntime same as | reported for #2 SRU/SCOT (E | J 019) SO2 ppm | | ···· | | | | |
| | | | | | | | — | | |
| | | —————————————————————————————————————— | | | | | — | | |
| | | ses were made, that I am famillar with | | | | were no exceedances during the | | | |
| reporting period. I certify tha | t I am familiar with the | information in this report and that to t | he best of my knov | viedge the inform | nation is valid. | • | | | |
| SUBMITTED BY: | See certificat: | ion page at front of report | | | | DATE. | | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE # #0203 (AI ID 447) |
|---|----------------------------|---|------------------------------|
| EMISSION UNIT(S): | | #2 SRU/SCOT unit | |
| POLLUTANT MONITORED: | | SO2 (lbs/hr) | <u> </u> |
| <u>DATE/TIME</u> | TOTAL DURATION (HRS) | MAX. CONCEN. (lbs/hr, 1-hr average) and ppm recal | c CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | |
| b) Control equipment 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| d) Other known causes 10/1/2016 1/1/2017 _ Total | 0,00 | No excess emissions. | |
| e) Unknown causes 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | |
| f) Soot blowing 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | |
| g) Fuel problems 10/1/2016 1/1/2017 | 0.00 | No excess emissions. | |

EXCESS EMISSION REPORT

| REPORTING QUARTER: | | Fourth, 2016 | AQDFILE# #0203 (AI ID 447) |
|---|----------------------------|-------------------------------------|----------------------------|
| EMISSION UNIT(S): | | #2 SRU/SCOT unit | |
| POLLUTANT MONITORED: | | 503 (Tpā/hr) | <u> </u> |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCEN. (Ibs/hr, 3-hr average) | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | |
| b) Control equipment 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| d) Other known causes Total | 0.00 | No excess emissions. | |
| e) Unknown causes 10/1/2016 1/1/2017 _ Total | 0,00 | No excess emissions. | |
| ர் Sout blowing 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | |
| g) Fuel problems 10/1/2016 1/1/2017_ Total | 0.00 | No excess emissions. | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Fourth, 2016 | ADD FILE #: #0203 (AI ID 447) |
|----------------------------|----------------------------|---|-------------------------------|
| EMISSION UNIT(S): | | #2 SRU/SCOT unit | |
| POLLUTANT MONITORED: | | SO2 (lbs/hr) | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | |
| | SO2 lb/hr do | whtime same as reported for #2 SRU/SCOT (EU (| 019) SO2 ppm |
| a) Monitor malfunction | | | |
| Total | 0.00 | See #2 SCOT ppm page for details | |
| b) Non-monitor malfunction | | | |
| Total | 0.00 | See #2 SCOT ppm page for details | |
| c) QA calibration | | | |
| Total | 0.00 | See #2 SCOT ppm page for details | |
| d) Other known causes | | | |
| Total | 1.00 | See #2 SCOT ppm page for details | |
| e) Unknown causes | | | |
| Total | 0.00 | See #2 SCOT ppm page for details | |

AQD FILE#: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 | NOX | CO | CO2 | O2 | TRS | H2\$ | HCL | Opacity |
|-----------------------------------|---------------------------------------|----------------|-------------------|-------------|----------|---------------------------------------|----------------|------------|-------------------------------------|
| | Other: | flow | | | | | | | |
| | | | ····· | - M | ONITO | R | | | |
| REPORTING QUARTER: | Fourth, 2016 | | | | ODEL: | • • | Fuel Gas | s Plow Ra | te/FG H2S CEM |
| orrano gorare | | | | - ~ | | | | | TO THE WAR |
| FACILITY: | | | | M | IFR: | | | | |
| St. Paul Park R | Refining Co. LL | .C | | _ | - | | | | |
| | | | | _ | | | | | |
| | | | | Ε | MISSIO | N LIMIT | S AND AVER | RAGING TIN | ME: |
| EMISSION SUBJECT ITEM: | EQUI17 | | | | i | 1.70 1 | b SO2/hr | - 3 hour | rolling average |
| | | | | | <u>.</u> | 0.030 | lb SO2/mm | btu - 3 l | hour rolling average |
| EMISSION UNIT(S): | Guard Case Re | actor Heat | er | _ | | | | | |
| | 36-8-1 | | | _ | MISSIO | N BASIS | 3: | SIP for | SO2 NAAQS |
| 4000014TE0 100110 | 001100 001100 | Dans | DOUTA ** - | immer | | | | | |
| ASSOCIATED ITEMS: | COMG9, COMG7, | EQUI163, | EQUI199, S | TRU62 | | | | | |
| | | | | т | OTAL C | DEDAT | ING HOURS | 2 | |
| | | | | | | SION U | | | |
| | | | | C | LIVING | CION UI | | 1864 | |
| A. EMISSION DATA SUMMAI | RY | | | В | . CEM | PERFOR | RMANCE SU | MMARY | |
| 1 DURATION OF EXC | | IRS) | | 1- | | | | | |
| | • | lb/hr | lb/mmbtu | | 1 [| DURATI | ON OF CEM | DOWNTIN | IE DURING |
| a) Startup/Shutdown | | 0.00_ | 0.00 | | ; | SOURCE | E OPERATIO | ON (HRS) | |
| b) Control equipment | | 0.00 | 0.00 | _ | | | or malfunctio | . , | 0.00 |
| c) Process problems | | 0.00 | 0.00 | | | • | nonitor maifu | | 0.00 |
| d) Other known caus | es | 0.00 | 0.00 | _ | (| c) QA ca | llibration | | 0.00 |
| e) Unknown causes | | 0.00 | 0.00 | _ | (| d) Other | known caus | es | 0.00 |
| f) Soot blowing | | 0.00 | 0.00 | _ | | e) Unkno | own causes | | 0.00 |
| g) Fuel problems | | 0.00 | 0.00 | _ | | | | | |
| 2 TOTAL DURATION | (HRS) | 0.00 | 0.00 | _ | 2 | TOTAL | DURATION (| (HRS) | 0.00 |
| 3 PERCENT OF TOTA | AL | | | | 3 | PERCEN | NT OF TOTA | AL | |
| EXCESS EMISSIONS | S | 0.00% | 0.00% | _ | (| CEM DO | WNTIME | | 0.00% |
| | | | | | | · · · · · · · · · · · · · · · · · · · | | | |
| | FOR OPACITY, R | ECORD ALL | TIMES IN MIN | UTES. F | OR GAS | SES, RE | CORD ALL | TIMES IN H | OURS. |
| <u> </u> | | | | | | | | | |
| % Total Excess Emissions = | | Total Duration | on of Excess E | missions | / (Total | Operati | ng Time - Cl | EM Downtim | ne) |
| % Total CEM Downtime = | | CEM Downti | me / Total Ope | erating Tir | me | | | | |
| | | | | | | | | | |
| NOTES: | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | <u> </u> | | |
| <u> </u> | · · · · · · · · · · · · · · · · · · · | | | | | | | | |
| | | | | | | | | | |
| If no exceedances: 1 certify that | at the required analy | ses were mad | de, that I am fa | amiliar wit | h the re | sults, an | d that to the | best of mv | knowledge there were no |
| exceedances during the report | ting period. I certify | that I am fami | iliar with the in | formation | In this | report ar | nd that to the | best of my | knowledge the information is valid. |
| SUBMITTED BY: | See certifica | tion page | at front o | f repor | rt. | | | DATE: | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|--|----------------------------|---------------------------------------|-------------------------------|
| EMISSION UNIT(S): | | 36-B-1 | |
| POLLUTANT MONITORED: | | S02 - 1b/hr | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX, CONCENTRATION | CAUSE/CORRECTIVE ACTION |
| | | · · · · · · · · · · · · · · · · · · · | |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | _ | |
| b) Control equipment 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | _ | |
| c) Process problems 10/1/2016 1/1/2017 | | No excess emissions. | |
| Tolal | 0.00 | 140 Expess cirilisateris. | |
| d) Other known causes 10/1/2016 1/1/2017 | 0.00 | _ No excess emissions, | |
| Total | 0.00 | | |
| e) Unknown causes 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| f) Soot blowing 10/1/2016 1/1/2017 | 0.00 | _No excess emissions. | |
| Total | 0.00 | | |
| g) Fuel problems 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | _ | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE#: #0203 (AI ID 447) |
|--|----------------------------|----------------------|------------------------------|
| EMISSION UNIT(S): | | 36-B-1 | |
| POLLUTANT MONITORED: | | SO2 - 1b/mmbtu | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION |
| | ···· | | |
| a) Startup/Shutdown | | | |
| 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| b) Control equipment 10/1/2018 | | | |
| 1/1/2017 _ | | No excess emissions. | |
| Total | 0.00 | _ | |
| c) Process problems 10/1/2016 | | | |
| 1/1/2017 _ | 0.00 | No excess emissions. | |
| Total | 0,00 | | |
| d) Other known causes 10/1/2016 1/1/2017 | | No excess emíssions. | |
| Total | 0.00 | - | |
| e) Unknown causes 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| f) Soot blowing | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| g) Fuel problems 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| | | | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Fourth, 2016 | AQD | FILE#: #0203 (A | AI ID 447) | |
|---------------------------------|---|---------------------------|-------|-----------------|------------|--|
| EMISSION UNIT(S): | | 36-B-1 Fuel Gas Flow Rate | | | | |
| POLLUTANT MONITORED: | | 502 | | | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | | | | |
| a) Monitor malfunction Total | 1000 1000 1000 1000 1000 1000 1000 100 | | | | > | |
| b) Non-monitor malfunction | | | | • | | |
| Total | 0.00 | - | | | | |
| c) QA calibration | 0:00 | | · · · | | | |
| d) Other known causes | | | | | | |
| Total | 0.00 | - | | | | |
| e) Unknown causes | 97.0.00 | | | 1. % | | |

AQD FILE #: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 | NOx | CO | CO2 | 02 | TRS | H2S | HCL | Opacity |
|---|---|----------------------------------|-----------------------------------|---------------------------------------|--------------------------|----------------------------|----------------------------------|--------------|---|
| | Other: | <u>Flow</u> | | _ | | | | | |
| | | | | | MONITO | OR | | | |
| REPORTING QUARTER: | Fourth, 2016 | | | _ | MODEL | <u>:</u> | Fuel Gas | Flow Rat | e/FG H2S CEM |
| | | | | | | | | | |
| FACILITY: | | | | | MFR: | | | | |
| St. Paul Park R | <u>ef</u> ining Co. L | rc | | - | | | | | |
| | | | | - | EMICOL | ON LIMIT | S AND AVE | олене тв | å⊑. |
| EMISSION SUBJECT ITEM: | #OUT18 | | | | EMISSE | | | | rolling average |
| LINISSION SUBJECT TIEN. | BOSTE | | | - | | | | | our rolling average |
| EMISSION UNIT(S): | Reactor Char | ge Heater | | | | 0.000 | LO COLY IIIIL | , cu | dar 10-11-19 average |
| | 36-B-2,3,4 | | | - | EMISSI | ON BASIS | 3 : | SIP for S | O2 NAAOS |
| | | | | - | | | _ | | |
| ASSOCIATED ITEMS: | COMG9, COMG7 | , EQUI163, | EQUI200, | STRU1: | 2 | | | | |
| | | | | | | | | | |
| | | | | | | | ING HOURS | | |
| | | | | | OF EMI | ssion ui | NIT: | 1866 | _ |
| A. EMISSION DATA SUMMA | RY | | | | B CEM | PERFOR | RMANCE SU | MMARY | |
| 1 DURATION OF EXC | | (HRS) | | | | | | | |
| | | lb/hr | lb/mmbtu | | 1 | DURATION | ON OF CEM | DOWNTIN | E DURING |
| a) Startup/Shutdown | | 0.00 | 0.00 | _ | l | SOURCE | E OPERATIO | ON (HRS) | |
| b) Control equipmen | t | 0.00 | 0.00 | | | a) Monito | or malfunctio | п | 0.00 |
| c) Process problems | | 0.00 | 0.00 | _ | | b) Non-n | nonitor malfu | nction | 0.00 |
| d) Other known caus | es | 0.00 | 0.00 | _ |] | c) QA ca | libration | | 0.00 |
| e) Unknown causes | | 0.00 | 0.00 | - | | • | known cause | es | 0.00 |
| f) Soot blowing | | 0.00 | 0.00 | • | • | e) Unkno | own causes | | 0.00 |
| g) Fuel problems | (upe) | 0.00 | 0.00 | • | , | TOTAL | NUDATION (| nuc/ | 0.00 |
| 2 TOTAL DURATION (3 PERCENT OF TOTAL | • | 0.00 | 0.00 | - | | | OURATION (| | 0.00 |
| EXCESS EMISSION | | 0.00% | 0.00% | 3 PERCENT OF TOTAL CEM DOWNTIME 0.00% | | | | 0.00% | |
| EXCESS ENISSION | • | 0.001 | 0.004 | - | 1 | OLIN BO | 7 4 1 4 1 H | | 0.004 |
| | FOR OPACITY, | RECORD AL | L TIMES IN MI | INUTE | s. For | GASES, I | RECORD AL | L TIMES IN | HOURS. |
| % Total Excess Emissions = | | Total Duratio | n of Excess E | mission | ns / (Tota | al Operatio | ng Time - CE | M Downtim | e) |
| % Total CEM Downtime = | | CEM Downti | me / Total Ope | erating | Time | | | | |
| NOTES: | | | • | _ | | | | | |
| 1101.50. | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| If no exceedances: I certify the exceedances during the report valid. | at the required and ting period. I certi | alyses were m fy that I am fa | ade, that I am miliar with the | familia Informa | r with the ation in t | e results, a his report | and that to th and that to th | e best of my | y knowledge there were no y knowledge the information is |
| SUBMITTED BY: | see certific | ation page | at front | of re | port | | _ | DATE: | |

| REPORTING QUARTER: | | Fourth, 2016 AQD FILE# #0203 (AI ID 447) | |
|--|-------------------|--|--|
| EMISSION UNIT(S): | | 36-B-2,3,4 | |
| POLLUTANT MONITORED: | | S02 - 1b/hr | |
| | TOTAL DURATION | | |
| DATE/TIME | (HRS) | MAX. CONCENTRATION CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| b) Control equipment 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | <u></u> | |
| c) Process problems 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| d) Other known causes 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| e) Unknown causes 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | _ NO excess emissions. | |
| f) Soot blowing 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| g) Fuel problems 10/1/2016 1/1/2017 Total | 0,00 | No excess emissions. | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE # #0203 (AI ID 447) |
|-----------------------|-------------------|--------------------------|------------------------------|
| EMISSION UNIT(S): | | 36-B-2,3,4 | |
| POLLUTANT MONITORED: | | SO2 - lb/mmbtu | _ |
| | TOTAL | | |
| DATE/TIME | DURATION (HRS) | MAX. CONCENTRATION CAU | ISE/CORRECTIVE ACTION |
| | (1)1.07 | MINUS CONCENTRATION OFFI | OEROOKILEOTIVE ACTION |
| a) Startup/Shutdown | | | |
| 10/1/2016 | | | |
| 1/1/2017 _ | | _ No excess emissions. | |
| Total | 0.00 | | |
| b) Control equipment | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | - | |
| c) Process problems | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| d) Other known causes | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| e) Unknown causes | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | _ | |
| n Soot blowing | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | • | |
| g) Fuel problems | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | - | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Fourth, 2016 | AQDFILE# #0203 (AI ID 447) |
|----------------------------|--|--------------------------|----------------------------|
| EMISSION UNIT(S): | | 36-B-2,3,4 Fuel Gas Flow | Rate |
| POLLUTANT MONITORED: | | S02 | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | |
| a) Monitor malfunction | 7 0.00 × | | |
| b) Non-monitor malfunction | | | |
| Total _ | 0.00 | - | |
| c)(QA calibration) | - 100 <u>100</u> - 100 - | | |
| d) Other known causes | | | |
| Total . | 0.00 | - | |
| e)(Unknown)(causes) | 0:00 | | |

AQD FILE#: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| REPORTING QUARTER: POURTH, 2916 MODEL: Puel Gas Plow Rate/FG H2S CEM FACILITY: MFR: St. Paul Park Refining Co. LLC EMISSION SUBJECT ITEM: SQU119 , 0.63 lb S02/hr - 3 hour rolling average 0.930 lb S02/mmbtu - 3 hour rolling average 0.930 lb S02/mmbtu - 3 hour rolling average 0.930 lb S02/mmbtu - 3 hour rolling average 0.930 lb S02/mmbtu - 3 hour rolling average 0.930 lb S02/mmbtu - 3 hour rolling average 0.930 lb S02/mmbtu - 3 hour rolling average 0.930 lb S02/mmbtu - 3 hour rolling average 0.930 lb S02/mmbtu - 3 hour rolling average 0.930 lb S02/mmbtu - 3 hour rolling average 0.930 lb S02/mmbtu - 3 hour rolling average 0.930 lb S02/mmbtu - 3 hour rolling average 0.930 lb S02/mmbtu - 3 hour rolling average 0.930 lb S02/mmbtu - 3 hour rolling average 0.94 mmstanding 0.94 mmstanding 0.94 mmstanding 0.94 mmstanding 0.94 mmstanding 0.95 | POLLUTANT (circle one): | SO2 | NOx | co | CO2 O2 TRS H2S HCL Opacity | | | | | | |
|---|----------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---|--|--|--|--|--|--|
| REPORTING QUARTER: Pour | | Other: | Flow | | *************************************** | | | | | | |
| FACILITY: St. Paul Park Refining Co. LLC | REPORTING OUARTER | Fourth 2016 | | | | | | | | | |
| EMISSION SUBJECT ITEM: EQUI19 | THE OTTING GOATTEN. | rodicii, zuio | | . | MODEL. FUEL GES FILW RELETTO BES CEN | | | | | | |
| EMISSION LIMITS AND AVERAGING TIME: | FACILITY: | | | | MFR: | | | | | | |
| EMISSION UNIT(S): Reactor Charge Heater 36-B-6E | St. Paul Park F | Refining Co. L | rc | | | | | | | | |
| EMISSION UNIT(S): Reactor Charge Heater 36-B-6E | | | | | | | | | | | |
| EMISSION UNIT(S): Reactor Charge Heater Sis-B-6E EMISSION BASIS: SIP for SO2 NAQS | EMISSION SUBJECT ITEM | 2011110 | | | | | | | | | |
| EMISSION UNIT(S): Reactor Charge Heater | EMISSION SUBJECT ITEM. | EQ0119 | | , | | | | | | | |
| ASSOCIATED ITEMS: COMG9, COMG7, EQUI163, EQUI201, STRUBO TOTAL OPERATING HOURS OF EMISSION UNIT: 1884 A EMISSION DATA SUMMARY 1 DURATION OF EXCESS EMISSIONS (HRS) a) Startup/Shutdown | EMISSION UNIT(S): | Reactor Char | ze Heater | | 0.030 ib SOZ/mmbtu - 3 hour rolling average | | | | | | |
| A EMISSION DATA SUMMARY 1 DURATION OF EXCESS EMISSIONS (HRS) 3) Startup/Shutdown 4) 0,00 6) 0,00 6) Process problems 6) 0,00 7) 0,00 | | | , | | EMISSION BASIS: SIP for SO2 NAAQS | | | | | | |
| A EMISSION DATA SUMMARY | | · · · · · · · · · · · · · · · · · · · | | | | | | | | | |
| A EMISSION DATA SUMMARY | ASSOCIATED ITEMS: | COMG9, COMG7 | EQUI163, | EQUI201, ST | rruso | | | | | | |
| A EMISSION DATA SUMMARY | | | | | | | | | | | |
| A EMISSION DATA SUMMARY 1 DURATION OF EXCESS EMISSIONS (HRS) 1 DURATION OF EXCESS EMISSIONS (HRS) 1 DURATION OF CEM DOWNTIME DURING 3) Startup/Shutdown 0 00 0 00 0 00 SOURCE OPERATION (HRS) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HRS) 2) Monitor malfunction 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | | | | | | | | | | | |
| 1 DURATION OF EXCESS EMISSIONS (HR\$) a) Startup/Shutdown b) Control equipment c) 0.00 c) Process problems d) 0.00 d) Other known causes 0.00 e) Unknown causes 0.00 g) Fuel problems 2 TOTAL DURATION (HR\$) 3 PERCENT OF TOTAL EXCESS EMISSIONS FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING 1 DURATION OF CEM DOWNTIME DURING 1 DURATION OF CEM DOWN OF C | | | | | OF EMISSION UNIT: 1884 | | | | | | |
| 1 DURATION OF EXCESS EMISSIONS (HR\$) a) Startup/Shutdown b) Control equipment c) 0.00 c) Process problems d) 0.00 d) Other known causes 0.00 e) Unknown causes 0.00 g) Fuel problems 2 TOTAL DURATION (HR\$) 3 PERCENT OF TOTAL EXCESS EMISSIONS FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING SOURCE OPERATION (HR\$) 1 DURATION OF CEM DOWNTIME DURING 1 DURATION OF CEM DOWNTIME DURING 1 DURATION OF CEM DOWN OF C | A. EMISSION DATA SUMMAI | RY | | | B. CEM PERFORMANCE SUMMARY | | | | | | |
| a) Startup/Shutdown b) Control equipment c) 0.00 0.00 c) Process problems 0.00 0.00 d) Other known causes 0.00 0.00 e) Unknown causes 0.00 0.00 f) Soot blowing 0, Fuel problems 0.00 0.00 2 TOTAL DURATION (HRS) 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00\\(\frac{1}{2}\) 0.00\\(\frac{1}\) 0.00\\(\frac{1}\) 0.00\(\frac{1}\) 0.00\(\frac{1}\) 0.00\(\f | | | HRS) | | | | | | | | |
| b) Control equipment c) Process problems 0.00 0.00 0.00 b) Non-monitor malfunction 0.00 c) Qualibration 0.00 c) Other known causes 0.00 0.00 e) Unknown causes 0.00 0.00 d) Other known causes 0.00 0.00 e) Unknown causes 0.00 0.00 g) Fuel problems 0.00 0.00 2 TOTAL DURATION (HRS) 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0. | | , | * | lb/mmbtu | 1 DURATION OF CEM DOWNTIME DURING | | | | | | |
| c) Process problems d) Other known causes 0.00 0.00 e) Unknown causes 0.00 0.00 f) Soot blowing 0.00 0.00 g) Fuel problems 2 TOTAL DURATION (HRS) 3 PERCENT OF TOTAL EXCESS EMISSIONS D.00 0.00 EXCESS EMISSIONS D.00 0.00 TOTAL DURATION (HRS) CEM DOWNTIME CEM DOWNTIME CEM Downtime CEM Downtime CEM Downtime CEM Downtime CEM Downtime Total Operating Time NOTES: If no exceedances: Certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no | a) Startup/Shutdown | | 0.00 | 0.00 | SOURCE OPERATION (HRS) | | | | | | |
| d) Other known causes 0.00 0.00 e) Unknown causes 0.00 0.00 f) Soot blowing 0.00 0.00 g) Fuel problems 0.00 0.00 2 TOTAL DURATION (HRS) 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00 0.00 FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. **Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) **Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: **In o exceedances: certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no | b) Control equipmen | t | 0.00 | 0.00 | a) Monitor malfunction 0.00 | | | | | | |
| e) Unknown causes 0.00 0.00 d) Other known causes 0.00 0.00 e) Unknown causes 0.00 0.00 g) Fuel problems 0.00 0.00 2 TOTAL DURATION (HRS) 0.00 0.00 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00\$ 0.00\$ CEM DOWNTIME 0.00\$ FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. **Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) CEM Downtime = CEM Downtime / Total Operating Time NOTES: If no exceedances: certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no | c) Process problems | ì | 0.00 | 0.00 | b) Non-monitor malfunction 0.00 | | | | | | |
| 1) Soot blowing 0.00 0.00 e) Unknown causes 0.00 2 TOTAL DURATION (HRS) 0.00 0.00 2 TOTAL DURATION (HRS) 0.00 3 PERCENT OF TOTAL 2 3 PERCENT OF TOTAL 2 CEM DOWNTIME 0.00\$ FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. **Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) **Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: If no exceedances: certify that the required analyses were made, that am familiar with the results, and that to the best of my knowledge there were no | d) Other known caus | es | 0.00 | 0.00 | c) QA calibration 0.00 | | | | | | |
| g) Fuel problems 2 TOTAL DURATION (HRS) 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00 \$ 0.00 \$ 0.00 \$ 0.00 \$ FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. **Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) **Total CEM Downtime = CEM Downtime / Total Operating Time **NOTES: | ! · · | | | | | | | | | | |
| 2 TOTAL DURATION (HRS) 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00 0.00 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00 0.00 CEM DOWNTIME 0.00 CEM DOWNTIME TOTAL DURATION (HRS) 3 PERCENT OF TOTAL CEM DOWNTIME 0.00 CEM DOWNTIME 0.00 CEM DOWNTIME TOTAL DURATION (HRS) 3 PERCENT OF TOTAL CEM DOWNTIME 0.00 CE | · • | | | | e) Unknown causes 0.00 | | | | | | |
| 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00% 0.00% CEM DOWNTIME 0.00% FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. **Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) **Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no | l | | | | | | | | | | |
| EXCESS EMISSIONS O.00% O.00% O.00% CEM DOWNTIME FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. **Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) **Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no | | • | 0.00 | 0.00 | | | | | | | |
| FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. % Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) % Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no | 1 | | | | | | | | | | |
| % Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) % Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no | EXCESS EMISSION: | 5 | 0.00% | 0.00% | CEM DOWNTIME | | | | | | |
| % Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no | | FOR OPACITY, F | RECORD ALL | TIMES IN MINU | ITES. FOR GASES, RECORD ALL TIMES IN HOURS. | | | | | | |
| NOTES: If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no | % Total Excess Emissions = | | Total Durati | on of Excess Em | nissions / (Total Operating Time - CEM Downtime) | | | | | | |
| NOTES: If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no | % Total CFM Downtime = | | CEM Downs | ime / Total Oners | rating Time | | | | | | |
| If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no | | | OLIN DOWN | inc rolar open | and the | | | | | | |
| | NO1ES | | | | | | | | | | |
| | | | · · · · · · · · · · · · · · · · · · · | | | | | | | | |
| | **** | | | · · · · · · · · · · · · · · · · · · · | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | If no exceedances: I certify the | at the required anal | yses were ma | ade, that I am fam | miliar with the results, and that to the best of my knowledge there were no | | | | | | |

SUBMITTED BY: See certification page at front of report DATE:

| REPORTING QUARTER: | | Fourth, 2016 | AQDFILE#: #9203 (AI ID 447) |
|--|----------------------------|------------------------|-----------------------------|
| EMISSION UNIT(S): | | 36-B-6E | |
| POLLUTANT MONITORED: | | S02 - 1b/hr | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | |
| b) Control equipment 10/1/2016 1/1/2017 _ Total | 0.00 | _ No excess emissions. | |
| c) Process problems 10/1/2016 1/1/2017 _ Totał | 0.00 | _No excess emissions. | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | |
| e) Unknown causes 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | |
| f) Soot blowing 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | |
| g) Fuel problems 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE#: #0203 (AI ID 447) |
|---|-------------------|------------------------|------------------------------|
| EMISSION UNIT(S): | | 36-B-6E | |
| POLLUTANT MONITORED: | | S02 - 1b/mmbtu | |
| | TOTAL DURATION | | |
| DATE/TIME | (HRS) | MAX, CONCENTRATION | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| b) Control equipment 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | _ | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| d) Other known causes 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | _ | |
| e) Unknown causes 10/1/2016 1/1/2017 _ Total | 0.00 | _ No excess emissions. | |
| f) Soot blowing 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | |
| g) Fuel problems 10/1/2016 1/1/2017 | 0.00 | _ No excess emissions. | |
| Total | 0.00 | | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE# | #0203 (AI ID 447) | |
|----------------------------|----------------------------|---------------------------|---|-------------------|-------|
| EMISSION UNIT(S): | | 3-B-6E Fuel Gas Flow Rate | | _ | |
| POLLUTANT MONITORED: | | S02 | | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | | | |
| a) Monitor malfunction | 0:00 | | 4. (A) (A) (A) (A) (A) (A) (A) (A) (A) (A) (A) | | . ′ - |
| b) Non-monitor malfunction | | | | | |
| Total - | 0.00 | _ | | | |
| c) QA calibration | #0:00 | | | | |
| d) Other known causes | | | | | |
| Total _ | 0.00 | - | | | |
| e) Unknown causes Total | 0,00 | | | | |

AQD FILE #: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 | NOx | co | CO2 | O2 | TRS | H2\$ | HCL | Opacity |
|---|-----------------|----------------|----------------|--------------|-----------|-------------|--------------------------|------------|---------------------|
| | Other: | Flow | | _ | | | | | |
| | | | | | MONITO | R | | | |
| REPORTING QUARTER: | Fourth, 2016 | | | - | MODEL: | | Fuel Gas | Flow Rat | e/FG H2S CEM |
| FACILITY: | | | | | MFR: | | | | |
| St. Paul Park R | efining Co. LLC | | | | _ | | | | <u> </u> |
| | | | | _ | | | | | |
| | | | | | EMISSIC | N LIMITS | S AND AVER | RAGING TIM | E: |
| EMISSION SUBJECT ITEM: | EQUI20 | | | _ | _ | 1.05 lb | SO2/hr - | 3 hour : | colling average |
| | | | | | - | 0.030 1 | .b 502/mmb | stu - 3 ho | our rolling average |
| EMISSION UNIT(S): | Reactor Charge | Heaters | · | _ | | | | | |
| | 36-B-6W | | | - | EMISSIC | IN BASIS | : | SIP for S | O2 NAAQS |
| ASSOCIATED ITEMS: | COMG9, COMG7, | EQUI163, E | QUI202, ST | 1 079 | _ | | | | |
| | | | | | - | | | | |
| | | | | | | | NG HOURS | | |
| | | | | | OF EMIS | SION UN | NIT: | 1886 | _ |
| A. EMISSION DATA SUMMA | RY | | | • | B. CEM | PERFOR | MANCE SU | MMARY | |
| 1 DURATION OF EXC | | RS) | | | | | | - | |
| | | lb/hr | lb/mmbtu | | 1 | DURATIO | ON OF CEM | DOWNTIM | E DURING |
| a) Startup/Shutdown | | 0.00 | 0.00 | _ | | SOURCE | OPERATION | ON (HRS) | |
| b) Control equipment | l | 0.00 | 0.00 | _ | | a) Monito | or malfunctio | n | 0.00 |
| c) Process problems | | 0.00 | 0.00 | _ | | b) Non-m | nonitor malfu | nction | 0.00 |
| d) Other known caus | es | 0.00 | 0.00 | _ | 1 | c) QA ca | | | 0.00 |
| e) Unknown causes | | 0.00 | 0.00 | _ | 1 | • | known caus | es | 0.00 |
| f) Soot blowing | | 0.00 | 0.00 | _ | - | e) Unkno | wn causes | | 0.00 |
| g) Fuel problems | u nos | 0.00 | 0.00 | - | _ | TOTAL F | NURATION (| UDC | |
| 2 TOTAL DURATION (| | 0.00 | 0.00 | _ | 1 | | DURATION (NT OF TOTA | | 0.00 |
| 3 PERCENT OF TOTA | | 0.00% | 0.005 | | 1 | | WNTIME | NL. | 0.00\$ |
| EXCESS EMISSION | 5 | 0.00% | 0.00% | - | | CEM DO | AAM I IIAIC | | 0.00% |
| | FOR OPACITY, RE | CORD ALL T | IMES IN MINU | JTES. | FOR GAS | ES, REC | ORD ALL T | IMES IN HO | URS. |
| % Total Excess Emissions = | | Total Dissatio | n of Excess E | | a IITatal | Onesstin | Time CEI | A Downtime | ` |
| | | | | | • | Operating | g Time - CEI | AI DOMUNIO | J |
| % Total CEM Downtime = | | CEM Downti | me / Total Ope | erating | Time | | | | |
| NOTES: | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| If no exceedances: I certify the exceedances during the report valid. | | | | | | | | | |
| SUBMITTED BY: | See certificat | ion page a | t front of | repor | ct | | | DATE: | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|------------------------------------|----------------|----------------------|-------------------------------|
| EMISSION UNIT(S): | | 36-B-6W | |
| POLLUTANT MONITORED: | | S02 - lb/hr | <u> </u> |
| | TOTAL | | |
| DATE/TIME | DURATION (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shuldown 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| b) Control equipment 10/1/2016 | | | |
| 1/1/2017 Tolal | 0,00 | No excess emissions. | |
| Diai | 0.00 | | |
| c) Process problems 10/1/2016 | | N | |
| 1/1/2017 Total | 0.00 | No excess emissions. | |
| į Otai | 0.00 | | |
| d) Other known causes 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| e) Unknown causes | | | |
| 10/1/2016 1/1/2017 | | No excess emissions. | |
| 1/1/2017 Total | 0.00 | No excess emissions. | |
| 1,500. | 0,00 | | |
| Soot blowing | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| g) Fuel problems | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD F | ILE#: #0203 | (AI ID 447) | |
|---|-------------------------|----------------------|--|-------------|-------------|--|
| EMISSION UNIT(S): | | 36-B-6W | | | | |
| POLLUTANT MONITORED: | | SO2 - lb/mmbtu | - | | | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX CONCENTRATION | CAUSE/CORRECTIVE ACTION | ı | | |
| <u> </u> | | | - COUNTY CONTROL OF THE COUNTY CONTROL OF THE COUNTY COUNT | · | | |
| a) Startup/Shutdown 10/1/2016 | | | | | | |
| 1/1/2017 | | No excess emissions. | | | | |
| Total | 0.00 | | | | | |
| b) Control equipment 10/1/2016 1/1/2017 | | No excess emissions. | | | | |
| Total | 0.00 | | | | | |
| c) Process problems 10/1/2016 | | | | | | |
| 1/1/2017 Total | 0.00 | No excess emissions. | | | | |
| i Oldi | 0.00 | | | | | |
| d) Other known causes 10/1/2016 1/1/2017 | | No excess emissions. | | | | |
| Total | 0.00 | • | | | | |
| e) Unknown causes 10/1/2016 | | | | | | |
| 1/1/2017 | | No excess emissions. | | | | |
| Total | 0.00 | | | | | |
| f) Soot blowing 10/1/2016 1/1/2017 | | No excess emissions. | | | | |
| Total | 00,0 | • | | | | |
| g) Fuel problems 10/1/2016 1/1/2017 | | No excess emissions. | | | | |
| Total | 0.00 | • | | | | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | Fourth, 2016 | AQD FILE #: #0203 (AI | ID 447) |
|-------------------------------|----------------------------|-----------------------|---------|
| EMISSION UNIT(S): | 36-B-6W Fuel Gas Flow Rate | | |
| POLLUTANT MONITORED: | S02 | | |
| TOTAL DATE/TIME DURATION (HR: | S) CAUSE/CORRECTIVE ACTION | | |
| a) Monitor malfunction | | 4 | |
| b) Non-monitor malfunction | | | |
| Total 0.00 | _ | | |
| c) QA calibration | | | |
| d) Other known causes | | | |
| Total 0.00 | _ | | |
| e) Unknown causes: | | | |

AQD FILE #: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| MONITOR REPORTING QUARTER: Fourth, 2016 MODEL: Fuel Gas Flow Rate/FG H2S CEM FACILITY: MFR: St. Paul Park Refining Co. LLC EMISSION SUBJECT ITEM: EQUI21 1.38 1b SO2/hr - 3 hour rolling average 0.030 1b SO2/mmbtu - 3 hour rolling average | |
|---|-------|
| REPORTING QUARTER: Fourth, 2016 MODEL: Fuel Gas Flow Rate/FG H2S CEM MFR: St. Paul Park Refining Co. LLC EMISSION SUBJECTITEM: EQUI21 1.38 1b SO2/hr - 3 hour rolling average 0.030 1b SO2/mmbtu - 3 hour rolling average | |
| FACILITY: St. Paul Park Refining Co. LLC EMISSION LIMITS AND AVERAGING TIME: 1.38 lb S02/hr - 3 hour rolling average 0.030 lb S02/mmbtu - 3 hour rolling average | |
| St. Paul Park Refining Co. LLC EMISSION LIMITS AND AVERAGING TIME: 1.38 lb SO2/hr - 3 hour rolling average 0.030 lb SO2/mmbtu - 3 hour rolling average | |
| St. Paul Park Refining Co. LLC EMISSION LIMITS AND AVERAGING TIME: 1.38 lb SO2/hr - 3 hour rolling average 0.030 lb SO2/mmbtu - 3 hour rolling average | |
| EMISSION LIMITS AND AVERAGING TIME: EMISSION SUBJECTITEM: EQUI21 1.38 lb SO2/hr - 3 hour rolling average 0.030 lb SO2/mmbtu - 3 hour rolling average | |
| EMISSION SUBJECT ITEM: EQUI21 1.38 lb SO2/hr - 3 hour rolling average 0.030 lb SO2/mmbtu - 3 hour rolling average | |
| EMISSION SUBJECT ITEM: EQUI21 1.38 lb SO2/hr - 3 hour rolling average 0.030 lb SO2/mmbtu - 3 hour rolling average | |
| 0.030 lb SO2/mmbtu - 3 hour rolling average | |
| | |
| EMISSION UNIT(S): Reactor Charge Heater | |
| 37-B-1 EMISSION BASIS: SIP for SO2 NAAQS | |
| ASSOCIATED ITEMS: TREAZO, TREAZI, COMG7, COMG8, EQUI163, EQUI203, STRU89 | |
| ASSOCIATED ITEMS: TREAZI, COMG7, COMG8, EQUI163, EQUI203, STRU89 | |
| TOTAL OPERATING HOURS | |
| OF EMISSION UNIT: 2198 | |
| | |
| A. EMISSION DATA SUMMARY B. CEM PERFORMANCE SUMMARY | |
| 1 DURATION OF EXCESS EMISSIONS (HRS) | |
| lb/hr lb/mmbtu 1 DURATION OF CEM DOWNTIME DURING | |
| a) Startup/Shutdown 0.00 SOURCE OPERATION (HRS) | |
| b) Control equipment 0.00 0.00 a) Monitor malfunction 0.00 | |
| c) Process problems 0.00 0.00 b) Non-monitor malfunction 0.00 | |
| d) Other known causes 0.00 0.00 c) QA calibration 0.00 | |
| e) Unknown causes 0.00 0.00 d) Other known causes 0.00 | |
| f) Soot blowing 0.00 0.00 e) Unknown causes 0.00 | |
| g) Fuel problems 0.00 0.00 | |
| 2 TOTAL DURATION (HRS) 0.00 0.00 2 TOTAL DURATION (HRS) 0.00 | |
| 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00% 0.00% 0.00% CEM DOWNTIME 0.00% | |
| EXCESS EMISSIONS 0.00% 0.00% CEM DOWNTIME 0.00% | |
| FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. | |
| | |
| % Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) | |
| % Total CEM Downtime = CEM Downtime / Total Operating Time | |
| NOTES: | |
| | |
| | |
| | |
| | |
| | |
| If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during the reporting period. I certify that I am familiar with the information in this report and that to the best of my knowledge the information is valid. | alid. |
| SUBMITTED BY: See certification page at front of report DATE: | |

| REPORTING QUARTER: | | Fourth, 2016 | AGD FILE#: #0203 (AI ID 447) | |
|---|-------------------|-------------------------|------------------------------|--|
| EMISSION UNIT(S): | | 37-B-1 | | |
| POLLUTANT MONITORED: | | S02 - 1b/hr | | |
| | TOTAL DURATION | | | |
| DATE/TIME | (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | • | | |
| b) Control equipment 10/1/2016 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | 110 CACESS CITASSIVIIS. | | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0,00 | No excess emissions. | | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0,00 | No excess emissions. | | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | |
| f) Soot blowing 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | |
| g) Fuel problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE#: | #0203 (AI ID 447 | '} |
|-----------------------|-------------------|----------------------------|------------------|------------------|----|
| EMISSION UNIT(S): | | 37-B-1 | | - | |
| POLLUTANT MONITORED: | | 502 - 1b/mmbtu | | | |
| | TOTAL DURATION | | | | |
| DATE/TIME | (HRS) | MAX. CONCENTRATION CAUSE/C | ORRECTIVE ACTION | | |
| a) Startup/Shutdown | | | | | |
| 10/1/2016 | | | | | |
| 1/1/2017 | | No excess emissions. | | | |
| Total | 0.00 | - | | | |
| b) Control equipment | | | | | |
| 10/1/2016 | | | | | |
| 1/1/2017 | | No excess emissions. | | | |
| Total | 0.00 | • | | | |
| c) Process problems | | | | | |
| 10/1/2016 | | | | | |
| 1/1/2017 | | No excess emissions. | | | |
| Total | 0.00 | • | | | |
| d) Other known causes | | | | | |
| 10/1/2016 | | | | | |
| 1/1/2017 | | No excess emissions. | | | |
| Total | 0.00 | | | | |
| e) Unknown causes | | | | | |
| 10/1/2016 | | | | | |
| 1/1/2017 | | No excess emissions. | | | |
| Total | 0.00 | | | | |
| n Soot blowing | | | | | |
| 10/1/2016 | | | | | |
| 1/1/2017 | | No excess emissions. | | | |
| Total | 0.00 | | | | |
| g) Fuel problems | | | | | |
| 10/1/2016 | | | | | |
| 1/1/2017 | | No excess emissions. | | | |
| Total | 0.00 | | | | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE#: #0203 (AI ID 447) | |
|----------------------------|----------------------------|---------------------------|------------------------------|--------------|
| EMISSION UNIT(S): | | 37-B-1 Fuel Gas Flow Rate | <u> </u> | |
| POLLUTANT MONITORED: | | 502 | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | | |
| a) Monitor malfunction | 0000 | | | |
| b) Non-monitor malfunction | | | | |
| Total | 0.00 | - | | |
| c)(QA)Callibration | £0!00/ | | | \$ \$ |
| d) Other known causes | | | | |
| Total | 0.00 | - | | |
| e)(Unknown(causes | 0.00 | | | ,;∈! &.;. |

AQD FILE #: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| POLLUTANT (circle one): | SO2 | NOx | co | CO2 | 02 | TRS | H2S | HCL | Opacity |
|---|-------------|----------------|----------------|-------------|-------------|-----------|--------------------------|------------|-----------------------|
| | Other: | | | - | MONITO | ND. | | | |
| REPORTING QUARTER: | Fourth, 2 | 016 | | _ | MODEL: | | Fuel Gas | Flow Ra | te/FG H2S CEM |
| FACILITY: | | | | | MFR: | | | | |
| St. Paul Park Ro | efining_Co | . LLC | | | _ | | | | |
| | | | | _ | | | | | |
| EMISSION SUBJECT ITEM: | POUTSE | | | | | | S AND AVE | - | |
| EMIGGION SOBJECT ITEM. | EQUIZE | | | - | - | | | | rolling average |
| EMISSION UNIT(S): | Product S | tripper Reb | oiler | | - | | LO 0027 11810 | <u> </u> | iour rounning average |
| | 37-B-2 | | | _ | EMISSIC | ON BASIS | 3: , | SIP for | SOZ NAAQS |
| ASSOCIATED ITEMS: | TREA22, T | REA23, COMO | 7, COMGB, | EQUI1 | 63, EQU | 1204, 5 | TRUSS | | |
| | | | | | TOTAL (| OPERAT | ING HOURS | 3 | |
| | | | | | OF EMIS | SION U | NIT: | 2209 | - |
| A. EMISSION DATA SUMMA | RY | | | | B. CEM | PERFOR | MANCE SL | JMMARY | |
| 1 DURATION OF EXC | ESS EMISSIC | NS (HRS) | | | | | | | |
| | | lb/hr | lb/mmbtu | | | | | | AE DURING |
| a) Startup/Shutdown | | 0.00 | 0.00 | - | 1 | | E OPERATIO | | |
| b) Control equipment | | 0.00 | 0.00 | - | | • | or malfunctio | | 0.00 |
| c) Process problems | ~~ | 0.00 | 0.00 | - | | , | ronitor malfu | Inction | 0.00 |
| d) Other known cause e) Unknown causes | es | 0.00 | 0.00 | - | | c) QA ca | | | 0.00 |
| f) Soot blowing | | 0.00 | 0.00 | - | | • | known caus | es | 0.00 |
| g) Fuel problems | | 0.00 | 0.00 | - | | e) Onkiic | wn causes | | 0.00 |
| 2 TOTAL DURATION (| HB6/ | | | - | ء ا | TOTAL F | NUDATION (| HBC/ | |
| 3 PERCENT OF TOTA | | 0.00 | 0.00 | - | | | OURATION (NT OF TOTA | | 0.00 |
| EXCESS EMISSIONS | | 0.00% | 0.00% | _ | | | WNTIME | 1 L | 0.00% |
| | | | | | <u> </u> | | | | |
| | FOR OPACI | TY, RECORD | ALL TIMES IN | I MINU | TES. FO | R GASE | S, RECORD | ALL TIME: | 3 IN HOURS. |
| % Total Excess Emissions = | | Total Duration | on of Excess E | mission | ns / (Total | Operatir | ng Time - CE | EM Downtin | ne) |
| % Total CEM Downtime = | | CEM Downt | me / Total Op | erating | Time | | | | |
| NOTES: | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | " |
| If no exceedances: I certify that no exceedances during the rep information is valid. | | | | | | | | | |
| SUBMITTED BY: | See certi | fication pa | ige at from | nt of | report | | | DATE: | |

| REPORTING QUARTER: | | Fourth, 2016 | | AQD FILE #: #0203 | {AI | ID 447) |
|-----------------------|----------|-------------------------|--------------------|-------------------|-----|---------|
| EMISSION UNIT(S): | | 37-B-2 | | | | |
| POLLUTANT MONITORED: | | S02 - lb/hr | | | | |
| | TOTAL | | | | | |
| | DURATION | | | | | |
| DATE/TIME | (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE A | CTION | | |
|) O(- 4 - 10) - 4 1 | | | | | | |
| a) Startup/Shutdown | | | | | | |
| 10/1/2016 | | ** | | | | |
| 1/1/2017 | | No excess emissions. | | | | |
| Total | 0.00 | | | | | |
| b) Control equipment | | | | | | |
| 10/1/2016 | | | | | | |
| 1/1/2017 | | No excess emissions. | | | | |
| Total | 0.00 | _140 excess ellissions. | | | | |
| Total | 0.00 | | | | | |
| c) Process problems | | | | | | |
| 10/1/2016 | | | | | | |
| 1/1/2017 | | No excess emissions. | | | | |
| Total | 0.00 | 140 6x0633 61113310113. | | | | |
| TO LOS | 0.00 | | | | | |
| d) Other known causes | | | | | | |
| 10/1/2016 | | | | | | |
| 1/1/2017 | | No excess emissions. | | | | |
| Total | 0.00 | 0.0222 0 | | | | |
| . 5.6. | 5.55 | | | | | |
| e) Unknown causes | | | | | | |
| 10/1/2016 | | | | | | |
| 1/1/2017 | | No excess emissions. | | | | |
| Total | 0.00 | | | | | |
| | | | | | | |
| f) Soot blowing | | | | | | |
| 10/1/2016 | | | | | | |
| 1/1/2017 | | No excess emissions. | | | | |
| Total | 0.00 | = | | | | |
| | | | | | | |
| g) Fuel problems | | | | | | |
| 10/1/2016 | | | | | | |
| 1/1/2017 | | No excess emissions. | | | | |
| Total | 0.00 | | | | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|---|-------------------|------------------------|-------------------------------|
| EMISSION UNIT(S): | | 37-B-2 | |
| POLLUTANT MONITORED: | | SO2 - 1b/mmbtu | |
| | TOTAL DURATION | | |
| DATE/TIME | (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | - | |
| b) Control equipment 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | _ | |
| c) Process problems 10/1/2016 1/1/2017 | | _ No excess emissions. | |
| Total | 0.00 | | |
| d) Other known causes 10/1/2016 1/1/2017 Totat | | No excess emissions. | |
| e) Unknown causes 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | = | |
| f) Scot blowing 10/1/2016 1/1/2017 | | _No excess emissions. | |
| Total | 0.00 | | |
| g) Fuel problems 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | _ | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

REPORTING QUARTER: Fourth, 2016 AQD FILE #: #0203 (AI ID 447) 37-B-2 Fuel Gas Flow Rate EMISSION UNIT(S): POLLUTANT MONITORED: S02 TOTAL DURATION (HRS) CAUSE/CORRECTIVE ACTION DATE/TIME a) Monitor malfunction

Total b) Non-monitor malfunction Total 0.00 d) Other known causes Total 0.00 e) Unknown cause

40000 TO!OOA

AQDFILE#: #0203 (AI ID 447)

EXCESS EMISSION AND CEM REPORTING FORM

| MONITOR MODEL: Fuel Gas Flow Rate/FG H2S CEM | POLLUTANT (circle one): | SO2 | NOx | со | CO2 | 02 | TRS | H2S | HCL | Opacity | |
|---|--|---------------|---------------|----------------------|-----------|----------|-----------------------|--------------|---------------|--------------|------------|
| REPORTING QUARTER: Pour Lb, 2016 MODEL: Poul Gas Flow Rate/FG H25 CEM FACILITY: SE. Paul Park Refining Co. LLC EMISSION SUBJECT ITEM: COM000000026, PQUI24 EMISSION LIMIT AND AVERAGE TIME: 1.48 Lb S02/hr - 1 hour rolling average 0.030 lb S03/mmbtu - 3 hour rolling average EMISSION UNIT(S): Hydrogen Plant Heaters 38-B-1, 38-B-2 EMISSION BASIS: SIP for S02 NAAGS. ASSOCIATED ITEMS: TREA16, TREA11, SQUI24, EQUI163, EQUI208, EQUI205, EQUI162, STRU87 OPERATING HOURS OF EMISSION UNIT: Total NSP Gas PSA Gas 2009 2209 2209 22198 A. EMISSION DATA SUMMARY DURATION OF EXCESS EMISSIONS (HRS) 1 Ibirmibita Ibir 1 Startup/Shutdown | | Other: - | Flow | | | MONITO | R | | | | |
| SET. Paul Park Refining Co. LLC EMISSION SUBJECT ITEM: COMMODODODOS, EQUI24 1.48 15 503/hr - 3 hour rolling average 1.3.48 15 503/hr - 3 hour rolling average 2.30 15 503/mebtu - 3 hour rolling average 2.30 15 503/mebtu - 3 hour rolling average 2.30 15 503/mebtu - 3 hour rolling average 2.30 15 503/mebtu - 3 hour rolling average 2.30 15 503/mebtu - 3 hour rolling average 2.30 15 503/mebtu - 3 hour rolling average 3.30 15 503/mebtu - 3 hour rolling ave | REPORTING QUARTER: | Fourth, 201 | 6 | | | | | Fuel Gas | Flow Rate/F | 3 H2S CEM | |
| EMISSION SUBJECT ITEM: | FACILITY: | | | | | MFR: | | | | | |
| EMISSION UNIT(S): | St. Paul Park Re | fining Co. LL | <u>.c</u> | | | | | | | | |
| ### BASSOCIATED ITEMS: ### BASSOCIATED ITEMS: ### BASSOCIATED ITEMS: ### TREA1S, TREA11, BQUI24, EQUI163, EQUI208, EQUI205, EQUI162, STRU87 Common | | | • | | | EMISSIO | ON LIMIT A | ND AVERA | GE TIME: | | |
| ASSOCIATED ITEMS: TRBA16, TRBA11, , BOUI24, EQUI163, EQUI208, EQUI205, EQUI162, STRUB7 OPERATING HOURS OF EMISSION UNIT: TOLa1 NSP Gas PSA Gas 2209 2209 2209 2209 A. EMISSION DATA SUMMARY DURATION OF EXCESS EMISSIONS (HRS) 1 Ib/mmbtu Ib/m a) Startup/Shutdown 0.00 0.00 c) Process problems 0.00 0.00 d) Other known causes 0.00 0.00 e) Unknown causes 0.00 0.00 e) Total Duration (HRS) 0.00 0.00 e) Unknown causes 0.00 | EMISSION SUBJECT ITEM: | COMODODODO | 26. EQU | 124 | | - | | | | | |
| ASSOCIATED ITEMS: TREA16 TREA11 , BOUIZ4 , EQUIJ63 , EQUIZ05 , EQUIJ65 , EQU | EMISSION UNIT(S): | Hydrogen Pl | ant Keate | 78 | | | 0.030 lt | SO2/mmb | tu - 3 hour | rolling aver | age |
| A. EMISSION DATA SUMMARY B. CEM Performance Summary DURATION OF EXCESS EMISSIONS (HRS) 1 1 1 1 1 1 1 1 1 | | | | | | EMISSIC | ON BASIS: | | SIP for SO2 | NAAQS | |
| A. EMISSION DATA SUMMARY B. CEM Performance Summary DURATION OF EXCESS EMISSIONS (HRS) 1 Ib/mmbtu Ib/mr SOURCE OPERATION (HRS) 0.00 | ASSOCIATED ITEMS: | TREA16, TRE | All, , EQ | UI24, EQUI: | 163, EQUI | 208, EQU | 1205, EC | UI162, S | TRU87 | | |
| A. EMISSION DATA SUMMARY DURATION OF EXCESS EMISSIONS (HRS) 1 DURATION OF EXCED DOWNTIME DURING 1 DURATION OF EXCESS EMISSIONS (HRS) 1 DURATION OF CREM DOWNTIME DURING 1 DURATION OF CREM DOWNTIME DURING 1 DURATION OF CREM DOWNTIME DURING 1 DURATION OF CREM DOWNTIME DURING 1 DURATION OF CREM DOWNTIME DURING 1 DURATION OF CREM DOWNTIME DURING 1 DURATION (HRS) 1 DURATION | | , | | | | | | | | - | |
| A EMISSION DATA SUMMARY DURATION OF EXCESS EMISSIONS (HRS) 1 Ib/mmbtu Ib/hr SOURCE OPERATION (HRS) a) Startup/Shutdown 0.00 | | | | | | OFERA | IIIVG HOU | KS OF EMI | | NSP Gas | PSA Gas |
| DURATION OF EXCESS EMISSIONS (HRS) 1 1 1 1 1 1 1 1 1 | | | | | | | | | | | |
| DURATION OF EXCESS EMISSIONS (HRS) 1 1 1 1 1 1 1 1 1 | A EMISSION DATA SIIMMAI | | ···· | ·· · ···· | | D CEN | Darforma | nna Russas | | | |
| 1 Ib/mmbtu Ib/hr SOURCE OPERATION (HRS) Nat Gas PSA Gas a) Startup/Shutdown 0.00 0.00 a) Monitor malfunction 0.00 0.00 c) Process problems 0.00 0.00 b) Non-monitor malfunction 0.00 0.00 d) Other known causes 0.00 0.00 0.00 d) Other known causes 0.00 0.00 0.00 e) Unknown causes 0.00 0.00 0.00 d) Other known causes 0.00 0.00 0.00 g) Fuel problems 0.00 0.00 0.00 e) Unknown causes 0.00 0.00 0.00 g) Fuel problems 0.00 0.00 0.00 2 TOTAL DURATION (HRS) 0.00 0.00 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00 0.00 2 TOTAL DURATION (HRS) 0.00 0.00 EXCESS EMISSIONS 0.00 0.00 0.00 0.00 0.00 Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. For total CEM Downtime = CEM Downtime / Total Operating Time - CEM Downtime) Total CEM Downtime = CEM Downtime / Total Operating Time - CEM Downtime) Total CEM Downtime = CEM Downtime / Total Operating Time - CEM Downtime) | | | (HRS) | | | | | | | RING | |
| b) Control equipment c) Process problems D) 0.00 D) 0.00 D) Non-monitor malfunction D) Non-monitor mal | | | | lb/mmbtu | 1b/hr | | | | | | |
| c) Process problems d) Other known causes 0.00 0.00 c) QA calibration 0.00 0.00 e) Unknown causes 0.00 0.00 d) Other known causes 0.00 0.00 g) Fuel problems 0.00 0.00 0.00 2 TOTAL DURATION (HRS) 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00 0.00\$ CEM DOWNTIME 0.00\$ FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) Total CEM Downtime = CEM Downtime / Total Operating Time NOTES: If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during the reporting period. I certify that I am familiar with the information in this report and that to the best of my knowledge the information is valid. | a) Startup/Shutdown | | | 0.00 | 0.00 | _ | | | | Nat Gas | PSA Gas |
| d) Other known causes e) Unknown causes e) Unknown causes for oexceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge theire were no exceedances during the reporting period. I certify that I am familiar with the information in this report and that to the best of my knowledge the information is valid. | b) Control equipment | | | 0.00 | 0.00 | | a) Monitor | malfunction | ı | 0.00 | 0.00 |
| e) Unknown causes for oexceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge their evere no exceedances during the reporting period. I certify that I am familiar with the information in this report and that to the best of my knowledge the information is valid. | c) Process problems | | | 0.00 | 0.00 | _ | b) Non-mo | nitor malfur | etion | 0.00 | 0.00 |
| 1) Soot blowing 0.00 0.00 e) Unknown causes 0.00 0.00 0.00 2) Total Duration (HRS) 0.00 0.00 2 Total Duration (HRS) 0.00 0.00 3) PERCENT OF TOTAL EXCESS EMISSIONS 0.00\$ 0.00\$ CEM DOWNTIME 0.00\$ 0.00\$ FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. FOR OPACITY OF TOTAL TOTAL OF TOTAL CEM DOWNTIME 0.00\$ 0.00\$ FOR OPACITY OF TOTAL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. FOR OPACITY OF TOTAL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. FOR OPACITY OF TOTAL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. FOR OPACITY OF TOTAL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. FOR OPACITY OF TOTAL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. FOR OPACITY OF TOTAL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. | • | es | | 0.00 | | 4 | c) QA calil | ration | | 0.00 | 0.00 |
| g) Fuel problems 2 TOTAL DURATION (HRS) 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00 0.00\$ 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00\$ 0.0 | ., | | | | | _ | - | | 5 | | |
| 2 TOTAL DURATION (HRS) 3 PERCENT OF TOTAL EXCESS EMISSIONS 0.00 | · | | | | | - | e) Unknow | n causes | | 0.00 | 0.00 |
| 3 PERCENT OF TOTAL EXCESS EMISSIONS O.00 & D.00 & CEM DOWNTIME FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. FOR OPACITY RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. FOR OPACITY RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. FOR OPACITY RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. | • • | | | | | _ | | | | | |
| FOR OPACITY, RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS. **Total Excess Emissions = Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) **Total CEM Downtime = CEM Downtime / Total Operating Time **NOTES: **In one exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during the reporting period. I certify that I am familiar with the information in this report and that to the best of my knowledge the information is valid. | , | • | | 0.00 | 0.00 | 1 | | • | • | 0.00 | 0.00 |
| Total Duration of Excess Emissions / (Total Operating Time - CEM Downtime) Total Downtime = CEM Downtime / Total Operating Time NOTES: fino exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during the reporting period. I certify that I am familiar with the information in this report and that to the best of my knowledge the information is valid. | | | | 0.00% | 0.00% | 1 | 1 | | | | 0.00% |
| NOTES: f no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during the reporting period. I certify that I am familiar with the information in this report and that to the best of my knowledge the information is valid. | | FOR OPACITY | , RECORD | ALL TIMES IN | MINUTES. | FOR GAS | ES, RECO | RD ALL TIM | MES IN HOURS. | | |
| NOTES: f no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during the reporting period. I certify that I am familiar with the information in this report and that to the best of my knowledge the information is valid. | 8/ T-1-1 5 5ii | | F-1-1 Dunadia | | | | T | 0511 0 | | | |
| f no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during the reporting period. I certify that I am familiar with the information in this report and that to the best of my knowledge the information is valid. | % Total CEM Downtime = | | | | | • | ung ime- | CEM DOWN | iume) | | |
| f no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during the reporting period. I certify that I am familiar with the information in this report and that to the best of my knowledge the information is valid. | MOTES: | | | | | | | | | | |
| during the reporting period. I certify that I am familiar with the information in this report and that to the best of my knowledge the information is valid. | WO 163. | | | | | | | | | | |
| during the reporting period. I certify that I am familiar with the information in this report and that to the best of my knowledge the information is valid. | | | | | | | | | <u> </u> | | |
| during the reporting period. I certify that I am familiar with the information in this report and that to the best of my knowledge the information is valid. | | | • | | | | | | | | |
| | - | • | • | | | | | | | | xceedances |
| | | • | | | | | ul e De \$(0) | my knowie | - | on is vaila. | |

| REPORTING QUARTER: | | Fourth, 2016 | | AQD FILE #: #0203 (AI ID 447) | | | |
|-----------------------|----------|----------------------|-------------------------|-------------------------------|--|--|--|
| EMISSION UNIT(S): | | 38-B-1, 38-B-2 | | | | | |
| POLLUTANT MONITORED: | | SO2 1b/mmbtu | | | | | |
| | TOTAL | | | | | | |
| | DURATION | | | | | | |
| DATE/TIME | (HRS) | CONCENTRATION | CAUSE/CORRECTIVE ACTION | | | | |
| a) Startup/Shutdown | | | | | | | |
| 10/1/2016 | | | | | | | |
| 1/1/2017 | | No excess emissions. | | | | | |
| Total | 0.00 | _ | | | | | |
| b) Control equipment | | | | | | | |
| 10/1/2016 | | | • | | | | |
| 1/1/2017 | | No excess emissions, | | | | | |
| Total | 0.00 | _ | | | | | |
| c) Process problems | | | | | | | |
| 10/1/2016 | | | | | | | |
| 1/1/2017 | | No excess emissions. | | | | | |
| Total | 0.00 | - | | | | | |
| d) Other known causes | | | | | | | |
| 10/1/2016 | | | | | | | |
| 1/1/2017 | | No excess emissions. | | | | | |
| Total | 0.00 | _ | | | | | |
| e) Unknown causes | | | | | | | |
| 10/1/2016 | | | | | | | |
| 1/1/2017 | | No excess emissions. | | | | | |
| Total | 0.00 | _ | | | | | |
| f) Soot blowing | | | | | | | |
| 10/1/2016 | | | | | | | |
| 1/1/2017 | | No excess emissions. | | | | | |
| Total | 0.00 | _ | | | | | |
| g) Fuel problems | | | | | | | |
| 10/1/2016 | | | | | | | |
| 1/1/2017 | | No excess emissions. | | | | | |
| Total | 0.00 | | | | | | |

| REPORTING QUARTER: | | Fourth, 2016 | | AQD FILE #: #0203 (AI ID 447) |
|--------------------------------|----------|----------------------|-------------------------|-------------------------------|
| EMISSION UNIT(S): | | 38-B-1, 38-B-2 | | |
| POLLUTANT MONITORED: | | SO2 lb/hr | | |
| | TOTAL | | | |
| | DURATION | • | | |
| DATE/TIME | (HRS) | CONCENTRATION | CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shutdown | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | • |
| Total | 0.00 | _ | | |
| b) Control equipment | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | | | |
| | | | | |
| c) Process problems | | | | |
| 10/1/2016 | | N+ | | |
| 1/1/2017 | 0.00 | No excess emissions. | | |
| Total | 0.00 | | | |
| d) Other known causes | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | - | | |
| | | | | |
| e) Unknown causes 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | | | |
| | | | | |
| f) Soot blowing | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | 0,00 | No excess emissions. | | |
| Total | 0,00 | | | |
| g) Fuel problems | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | - | | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Pourth, 2016 | AQD FiLE #: | #0203 | AI ID 447) | |
|----------------------------|----------------------------|-------------------------|-------------|-------|------------|---------------------------------------|
| EMISSION UNIT(S): | | 38-B-1, 38-B-2 | | | | |
| POLLUTANT MONITORED: | | Nat Gas Flow Rate | _ | | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | | | | |
| a) Monitor malfunction | 0.00 | | | | | · · · · · · · · · · · · · · · · · · · |
| b) Non-monitor malfunction | | | | | | |
| Total | 0.00 | | | | | |
| c) QA calibration | 0.00 | | | | | . 3- |
| d) Other known causes | | | | | | |
| Total | 0,00 | | | | | |
| e) Unknown causes Total | 0.00 | | | | | . 13 |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Pourth, 2016 | | AQ | D FILE #: #0203 (| AI ID 447 | <u> </u> |
|------------------------------|----------------------------|---------------------|------|--|-------------------|-----------|----------|
| EMISSION UNIT(S): | | 38-B-1, 38-B-2 | · | | | | |
| POLLUTANT MONITORED: | | PSA Gas Plow Rate | | | | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE AC | NOIT | | | | |
| a) Monitor malfunction Total | 0.00 | | | | | | |
| b) Non-monitor malfunction | | | | | | | |
| Total | 0.00 | | | | | | |
| c) QA calibration | 0.00 | | 18 | | : | | |
| d) Other known causes | | | | | | | |
| Total | 0.00 | | | | | | |
| e) Unknown causes Total | 10.00 | | • | ************************************** | , | | |

AQD FILE #: #0203 (AI ID 447)

| POLLUTANT (circle one): | SUZ NUX | 00 002 | DZ OZ TRS H2S HCL Opacity | | | | |
|--------------------------------------|------------------------|--------------------|---|--|--|--|--|
| | Other: TOC | | | | | | |
| | | | MONITOR | | | | |
| REPORTING QUARTER: | Fourth, 2016 | | MODEL: Polytron IR Ex HC | | | | |
| | | | MFR:Drager, Inc | | | | |
| FACILITY: | | | | | | | |
| St. Paul Park Re | fining Co. LLC | | EMISSION LIMIT AND AVERAGE TIME: | | | | |
| | | | 10 mg TOC/liter of gasoline loaded (6 hour avg) | | | | |
| | | | 0.74% - CEM limit established by stack test | | | | |
| | | | as surrogate for 10 mg/L | | | | |
| EMISSION SUBJECT ITEM: | EQU10000000028 | | | | | | |
| | | | EMISSION BASIS: | | | | |
| EMISSION UNIT(S): Light oil loadrack | | | 40 CFR 63.422(b) NESHAP Subpart CC | | | | |
| | Vapor Recovery Unit | | | | | | |
| ASSOCIATED ITEMS: | TREA18, TREA25, EQUI: | 168, STRU31, S | STRU016_ | | | | |
| | | | | | | | |
| | | | TOTAL OPERATING HOURS | | | | |
| | | | OF EMISSION UNIT: 2185 | | | | |
| A. EMISSION DATA SUMMAR | Y | | B. CEM PERFORMANCE SUMMARY | | | | |
| | | | | | | | |
| 1 DURATION OF EXCE | SS EMISSIONS (HRS) | | 1 DURATION OF CEM DOWNTIME DURING | | | | |
| a) Startup/Shutdown | | 0.00 | SOURCE OPERATION (HRS) | | | | |
| b) Control equipment | | 0.00 | a) Monitor malfunction 0.00 | | | | |
| c) Process problems | | 0.00 | b) Non-monitor malfunction 0 . 00 | | | | |
| d) Other known cause | ş | 0.00 | c) QA calibration 0.00 | | | | |
| e) Unknown causes | | 0.00 | d) Other known causes 0.00 | | | | |
| f) Soot blowing | | 0.00 | e) Unknown causes 0.00 | | | | |
| g) Fuel problems | | 0.00 | | | | | |
| 2 TOTAL DURATION (I | rs) | 0.00 | 2 TOTAL DURATION (HRS) 0.00 | | | | |
| 3 PERCENT OF TOTAL | | | 3 PERCENT OF TOTAL | | | | |
| EXCESS EMISSIONS | | 0.00% | CEM DOWNTIME 0.00% | | | | |
| | FOR OPACITY RECORD A | LL TIMES IN MIN | INUTES. FOR GASES, RECORD ALL TIMES IN HOURS. | | | | |
| | 10110111111200101 | CE THILD IN THIS | HOTES. FOR GROCES, REGISTED ACE THREE IN HOUSE. | | | | |
| % Total Excess Emissions = | Total Durati | ion of Excess Emis | nissions / (Total Operating Time - CEM Downtime) | | | | |
| % Total CEM Downtime = | CEM Down | time / Total Opera | rating Time | | | | |
| | | • | • | | | | |
| NOTES: | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | miliar with the results, and that to the best of my knowledge there were no formation in this report and that to the best of my knowledge the information | | | | |
| SUBMITTED BY: | See certification page | ge at front o | of report DATE: | | | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE # #0203 (AI ID | 447) |
|---|----------------------------|----------------------------|-------------------------|------|
| EMISSION UNIT(S): | | Light oil loadra | ek VRU | |
| POLLUTANT MONITORED: | | TOC | | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shutdown 10/1/2016 | | | | |
| 1/1/2017 _ Total | 0.00 | _ No excess emissions. | | |
| b) Control equipment 10/1/2016 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | - | | |
| c) Process problems 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | | |
| d) Other known causes 10/1/2016 1/1/2017 | 0,00 | No excess emissions. | | |
| Total | 0.00 | | | |
| e) Unknown causes 10/1/2016 1/1/2017 _ | 0.00 | _No excess emissions. | | |
| Total | 0.00 | | | |
| f) Soot blowing 10/1/2016 1/1/2017 _ Total | 0.00 | _ No excess emissions. | | |
| g) Fuel problems 10/1/2016 1/1/2017 | 0.00 | No excess emissions, | | |
| Total - | 0.00 | _ (40 600000 011110010115, | | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #02 | 03 (AI ID 447) |
|------------------------------|-------|-------------------------|-----------------|----------------|
| EMISSION UNIT(S): | | Light oil loadrack VRU | | |
| POLLUTANT MONITORED: | | TOC | | |
| DATE/TIME | TOTAL | CAUSE/CORRECTIVE ACTION | | |
| a) Monitor malfunction Total | 0.00 | · . | | |
| b) Non-monitor malfunction | | | | |
| Total | 0.00 | - | | |
| c) OA calibration | 0.00 | | | |
| d) Other known causes | | | | |
| | 0.00 | _ | | |
| e) Unknown causes. | 0000 | | | |

AQD FILE #: #0203 (AI ID 447)

| POLLUTANT (circle one): | SO2 | NOx | CO | CO2 | O2 | TRS | H2S | HCL | Opacity | |
|--|---------------------|--------------|--------------|----------|-------------|---------------|------------------|--------------|--------------------------|----|
| | Other: T | emperature |) | | | | | | | |
| | | | | • | MONITO |)R | | | | |
| REPORTING QUARTER: | Fourth, 2016 | | | | MODEL: | | Thermoco | ouple | | |
| | | | | | | | | | | |
| FACILITY: | | | | | MFR: | NA | | | | |
| St. Paul Park R | efining Co. Li | ic | | | | | | | | |
| | | | | | EMICSI | AA TIMILIM | ID AVERAGE | TIME: | | |
| EMISSION SUBJECT ITEM: | COM00000000021 | 3 | | | LMIOOK | | - 3 hour r | | verage | |
| | Unit Startup | | | | | | J Modi I | Jiiiig a | reruge | |
| | July Dudicop | 0,0,00 | *** | 1 | EMISSIO | ON BASIS: | Title V | Permit | | |
| EMISSION UNIT(S): | Light oil loa | adrack | | | |) | 11010 7 | TOTAL | | |
| | Permanent Va | or Combus | stor Unit | (PVC | (D) | _ | | | | |
| | | | | | | | | | | |
| ASSOCIATED ITEMS: | TREA26, EQUI: | 28, EQUI4 | 1, STRU32 | <u> </u> | | | | | | |
| | | | | | | | | | | |
| | | | | | | OPERATING | | | | |
| | | | | | OF EMIS | SSION UNIT | : | 25 | _ | |
| A. EMISSION DATA SUMMAI | RY | | | | B. CEM | PERFORMA | NCE SUMM | ARY | | |
| | | | | | 1 | | | | <u> </u> | |
| 1 DURATION OF EXC | ESS EMISSIONS | (HRS) | | | 1 | DURATION | OF CEM DO | OWNTIME (| OURING | |
| a) Startup/Shutdown | | | 0.00 | | | SOURCE O | PERATION | (HRS) | | |
| b) Control equipment | | | 0.00 | ' | | a) Monitor r | natfunction | | 0.00 | |
| c) Process problems | | · | 0.00 | | | b) Non-mor | nitor malfuncti | ion | 0.00 | |
| d) Other known cause | es | | 0.00 | | 1 | c) QA calib | ration | | 0.00 | |
| e) Unknown causes | | | 0.00 | , | | d) Other kn | own causes | | 0.00 | |
| f) Soot blowing | | | 0.00 | | | e) Unknow | n causes | | 0.00 | |
| g) Fuel problems | | | 0.00 | | | | | | | |
| 2 TOTAL DURATION (| (HRS) | | 0.00 | | 2 | TOTAL DU | RATION (HR | (S) | 0.00 | |
| 3 PERCENT OF TOTA | L | | | | 3 | PERCENT | OF TOTAL | | | |
| EXCESS EMISSION | s | | 0.00% | | | CEM DOW | NTIME | | 0.00% | |
| | | | | | <u> </u> | | | | | |
| | FOR OPACITY, F | RECORD AL | L TIMES IN | I MINU | TES. FOR | R GASES, R | ECORD ALL | TIMES IN | HOURS. | |
| At Tital Cinasa Madadas - | To | tal Dunting | - | | - 10- 1-14 | O | 0514.5 | .4 | | |
| % Total Excess Emissions = | | | | | | Operating III | me - CEM Do | wntime) | | |
| % Total CEM Downtime = | CE | M Downtime | 3 / Total Op | erating | Time | | | | | |
| NOTES: | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| If no exceedances: I certify that | | | | | | | | | | |
| exceedances during the reporti is valid. | ng penoa. I certify | mat i am far | muar with th | ne inton | mation in t | nis report an | id that to the I | best of my k | nowledge the information | ЭN |
| | 0 | | | | | | | | | |
| SUBMITTED BY: | See certifica | ttion page | at from | ic of | report | | | DATE: | | |

| REPORTING QUARTER: | | Fourth, 2016 | | AOD FILE #: #0203 (AI ID 447) |
|--|----------------|-----------------------|----------------------|-------------------------------|
| EMISSION UNIT(S): | | Light oil loadrack | Process Vapor Burner | (F |
| POLLUTANT MONITORED: | | Temperature | | |
| | TOTAL DURATION | | | |
| DATE/TIME | (HRS) | MIN.TEMPERATURE | CAUSE/CORRECTIVE ACT | ON |
| a) Startup/Shutdown 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | | |
| b) Control equipment 10/1/2016 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | - | | |
| .c) Process problems 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | |
| e) Unknown causes 10/1/2016 1/1/2017 | 0.00 | No excess emissions. | | |
| Total | 0.00 | - | | |
| f) Soot blowing 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | | |
| g) Fuel problems 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE # | #0203 (AI ID 447) |
|---|----------------------------|--------------------------|------------|-------------------|
| EMISSION UNIT(S): | | Light oil loadrack - PVB | | _ |
| POLLUTANT MONITORED: | | Temperature | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | | |
| a) Monitor malfunctions | 0.00 | | | |
| b) Non-monitor malfunction | | | | |
| Total | 0.00 | - | | |
| c) (QA) Calibration | 77 (0.003) | | | |
| d) Other known causes | | | | |
| Total | 0.00 | | | |
| e) Unknown causes * 4.4 4.4 4.4 4.4 4.4 4.4 4.4 4.4 4.4 4 | 0.00 | | | |

| POLLUTANT (circle one): | SO2 NOx | CO CO2 | O2 TRS | H2S | HCL Opacity Other | | | |
|---|-------------------|---------------------|-----------------------------------|-----------------|---|-------------------------|--|--------------------------|
| Other: | This report add | resses Flare SA | RA reportable | emissions, | pilot monitoring, pilot | flame outage | es. and SO2 monitoring | |
| REPORTING QUARTER: | Pourth, 2016 | | MONITOR MODEL SOLA II | Dual Range | | | | |
| FACILITY: | | | AFR: Thermo S | | | | ····· | |
| St. Paul Park Refin | ing Co. LLC | | EMISSION LIMIT A | ND AVEDAGE | - TILAE+ | | | |
| EMISSION SUBJECT ITEM: | TREA13 | | - LIVII A | IND AVERAGE | IME. | | | |
| EMISSION UNIT(S): | | E | MISSION BASIS: | | | | | |
| TREA13 Refinery fla: | re stack | | 40 CFR 6 | 3 NESHAP S | ubpart CC, Subpart Ja | | | |
| ASSOCIATED ITEMS: | FUGI73 | | | | | | | |
| | | | | | TING HOURS | | | |
| | | | U | FEMISSION | UNIT: | | 2209 | |
| A. EMISSION DATA SUMMA | RY | B. CEM PERFOR | MANCE SUMMAR | Y (Scanner) | C. CEM PERFORMANCE SUMMA | IRY | | |
| 1 DURATION OF SARA REI | | | N OF CEM DOWN | | 1 DURATION OF CEM DO | | DURATION OF PILOT DOW | |
| EMISSIONS (HRS) | SO2 NOx | | SOURCE OPERAT | , , | DURING SOURCE OPE | | DURING SOURCE OPERA | |
| a) Startup/Shutdown | 0.00 0.00 | | malfunction enitor malfunction | 0.00 | a) Monitor malfunction b) Non-monitor malfunction | 0.00 | a) Pilot malfunction b) Other known causes | 0.00 |
| b) Control equipment c) Process problems | 0.00 0.00 | | _ | 0.00 | c) QA calibration | ion <u>0,00</u> 3,00 | c) Unknown causes | 0.00 |
| d) Other known causes | 0.00 0.00 | - ' ' | nown causes | 2.37 | d) Other known causes | 19.00 | 1 . | |
| e) Unknown causes | 0.00 0.00 | | | 0.00 | e) Unknown causes | 0.00 | TOTAL DURATION (HRS) | 0.00 |
| f) Soot blowing | 0.00 0.00 | | _ | | | | PERCENT OF TOTAL | |
| g) Fuel problems | 0.00 0.00 | 2 TOTAL DI | JRATION (HRS)_ | 2.37 | 2 TOTAL DURATION (HR | 5) 22.00 | PILOT DOWNTIME | 0.00% |
| 2 TOTAL DURATION (HRS) | 0.00 0.00 | _ | | | 3 PERCENT OF TOTAL | | | |
| 3 PERCENT OF TOTAL | | CEM DOV | VNTIME | 0.111 | CEM DOWNTIME | 1,00k | 4 | |
| EXCESS EMISSIONS | 0.00% 0.00% | <u> </u> | | | | | 1 | |
| | FOR OPACITY, REC | CORD ALL TIMES IN | MINUTES. FOR | GASES, REC | ORD ALL TIMES IN HOURS. | | | |
| % Total Excess Emissions = | Total D | uration of SARA Re | portable Emissions | / (Total Open | ating Time - CEM Downtime) | | | |
| % Total CEM Downtime = | CEM Do | owntime / Total Ope | rating Time | | | | | |
| NOTES: | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| If no exceedances: I certify | | | | | ind that to the best of my knowledg | | | orting period. I certify |
| · | | | | s report and th | nat to the best of my knowledge the | a information is | | • |
| SUBMITTED BY: | See certification | on page at from | t of report | | | | DATE: | |

SARA Reportable Emissions Report - SO2 (i.e., > 500 lbs)

| REPORTING QUARTER: | Fo | nurth, 2016 | _ | AQD FR.E # #0203 (AT ID 447) |
|---|----------------------------|------------------------------|-------------------------|------------------------------|
| EMISSION UNIT(S): | TR | REAl3 Refinery fl. | ere stack | |
| POLLUTANT MONITORED: | <u>so</u> | 2 | _ | |
| DATE/TIME | TOTAL DURATION (HRS) | APPROX. SO2 EMITTED (LBS) | CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shutdown 10/1/2016 1/1/2017 Total | 0.00 | | | |
| b) Control equipment 10/1/2016 1/1/2017 Total | 0.00 | | | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | | | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0.00 | | | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | | | |
| f) Soot blowing 10/1/2018 1/1/2017 Total | 0.00 | | | |
| g) Fuel problems 10/1/2018 1/1/2017 | 22 | | | |
| Total | 0.00 | | | |

SARA Reportable Emissions Report - NO2 (i.e., > 1000 lbs)

| REPORTING QUARTER: | | Fourth, 2016 | _ | AQD FILE # #0203 (AT ID 447) |
|---|----------------------------|------------------------------|-------------------------|------------------------------|
| EMISSION UNIT(S): | | TREA13 Refinery f | lare stack | |
| POLLUTANT MONITORED: | | MA | _ | |
| DATE/TIME | TOTAL DURATION (HRS) | APPROX. NO2 EMITTED (LBS) | CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shutdown 10/1/2018 1/1/2017 Total | 0.00 | • | | |
| b) Control equipment 10/1/2016 1/1/2017_ Total | 0.00 | | | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | | | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0.00 | | | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | | | |
| f) Soot blowing 10/1/2016 1/1/2017 Total | 0.00 | | | |
| g) Fixed problems 10/1/2016 1/1/2017 _ Total | 0.00 | | | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Pourth, 2016 AQDFILE# #0203 (AI ID 447) | |
|--|----------------------------|--|---------|
| EMISSION UNIT(S): | | TREAL3 Refinery flare stack | |
| POLLUTANT MONITORED: | | 502 | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | |
| a) Monitor malfunction | 0.00 | | |
| b) Non-monitor malfunction | | | |
| Total | 0.00 | | |
| c) QA calibration [127720] 6 ; 13.007 | 100 m | Lighter Calibration gas audit | はいないないと |
| d) Other known causes 11/2/2016 10:00 | | | |
| 11/2/2016 12:00 12/28/16 10:00 | 2.00 | Preventive maintenance. | |
| 12/28/16 16:00 12/28/16 21:00 | 6.00 | Proventive maintenance on sampling system and pyrolyzer rebuild. | |
| 12/29/16 8:00 | 11.00 | Asintenance. Replaced pyrolyzer coil. | |

Total e) Unknown causes Total

Page 3-140

FLARE SCANNER DOWNTIME REPORT

| | | - · · · · · · · - · - · - · - · · · · · | |
|--|----------------------------|--|------------------------------|
| REPORTING QUARTER: | | Pourth, 2016 | AGD FILE # #0203 (AI ID 447) |
| EMISSION UNIT(S): | | TREALS Refinery flare stack | |
| POLLUTANT MONITORED: | | Flame Presence (Non-Pollutant) | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | |
| a) Monitor malfunction Total | 0.00 | | |
| b) Non-monitor malfunction | | | |
| Total | 0.00 | | |
| c) QA calibration | 0.00* | | |
| d) Other known causes 10/9/2016 3:26 | | | |
| 10/9/2016 3:37 | 0.18 | IR camera data acquisition error but at least one thermocouple greater than 1000 degrees indicates f | lame . |
| 10/9/2016 4:55 10/9/2016 5:16 | 0.35 | IR camera data acquisition error but at least one thermocouple greater than 1000 degrees indicates f | lame |
| 10/9/2016 5:45 10/9/2016 7:33 | 1,80 | IR camera data acquisition error but at least one thermocouple greater than 1000 degrees indicates f | lame |
| 11/27/2016 8:25 11/27/2016 8:27 | 0.03 | R camera data acquisition error but at least one thermocouple greater than 1000 degrees indicates f | lame |
| | | | |
| | | | |
| Total | 2.37 | | |
| avitaba a da a da a da a da a da a da a da | | 3 | |

FLARE PILOT DOWNTIME REPORT

| REPORTING QUARTER: | | Fourth, 2016 | | ADD FRE # 10203 (AT ID 497) |
|---|---------------------------|---------------------------------------|---|-----------------------------|
| EMISSION UNIT(S): | | TREA000000013 | _ | |
| POLLUTANT MONITORED: | | Flame Presence (Non-Pollutant) | | |
| DU | TOTAL URATION (HRS) | CAUSE/CORRECTIVE ACTION | | |
| a) Pilot malfunction 10/1/2018 1/1/2017 Total | 0.00 | | | |
| b) Other known causes 10/1/2016 1/1/2017 Total | 0.00 | | | |
| c) Unknown causes 10/1/2016 1/1/2017 Total | 0,00 | · · · · · · · · · · · · · · · · · · · | | • |

AQD FILE#: #0203 (AT ID 447)

| POLLUTANT (circle one): | SO2 | NOx | co | CO2 | O2 | TRS | H2S | HCL | Opacity | |
|---|-------------|----------------|---------------|--------------------|------------|---|----------------------|--|------------------------------|----------------|
| | Other: | Temp | | | MONT | 00 | | | | |
| REPORTING QUARTER: | Fourth, 20 | 16 | | | MODEL | | 002A | GC_ | | |
| | | | | | | | | <u>. </u> | | |
| FACILITY: | | | | | MFR: | | ABB | | | |
| St. Paul Park Re | fining Co. | LLC | | | | | | | | |
| | | | | • | EMISSI | | | ERAGE TIME | | |
| EMPORON PUR ISOT ITEM | | | | | | | | | rolling aver lling averag | |
| EMISSION SUBJECT ITEM: | TREA5 | | | - | | > 1400 | DEGF - | . 3 NOUI EO | iling averag | <u></u> - |
| EMISSION UNIT(S): | W.W.T.P. T | hermal Oxi | dizer | | | | | | | |
| . , | (SBC Vent | Gas / TO T | emperature | } | EMISSI | ON BAS | IS: | | | |
| | | | | • | | 40 CFR | 52.21 | | | |
| ASSOCIATED ITEMS: | EQUI209, S | TRU22, SVO | 65 | - | | MN Rui | 2 7007.08 | 100, Subp. 2 | | |
| | | | | | | | | | | |
| | | | | | | | TING HOL | JRS | | |
| | | | | | OF EM | ISSION L | JNIT: | 2209 | _ | |
| A. EMISSION DATA SUMMAI | RY | | <u> </u> | | B. CEN | I PERFO | RMANCE | SUMMARY | | |
| 1 DURATION OF EXCE | | S (HRS) | | | D. OL., | , , <u>, , , , , , , , , , , , , , , , , </u> | , (iii) 1110 E | · · · | | |
| | | | H2S | Temperature | 1 1 | DURAT | ION OF C | EM DOWNTH | ME DURING | |
| a) Startup/Shutdown | | | 0.00 | 0.00 | | | | ATION (HRS) | H2S | Temperature |
| b) Control equipment | | | 0.00 | 0.00 | - | | tor malfun | • • | 0.00 | 0.00 |
| c) Process problems | | | 0.00 | 0.00 | 7 | b) Non- | monitor m | alfunction | 0.00 | 0.00 |
| d) Other known cause | s | | 0.00 | 0.00 | | c) QA c | alibration | | 0.00 | 0.00 |
| e) Unknown causes | | | 0.00 | 0.00 |] | d) Othe | r known c | auses | 0.00 | 0.00 |
| f) Soot blowing | | | 0.00 | 0.00 |] | e) Unkn | own caus | es | 0.00 | 0.00 |
| g) Fuel problems | | | 0.00 | 0.00 | j | | | | | |
| 2 TOTAL DURATION (F | irs) | | 0.00 | 0.00 | _ 2 | TOTAL | DURATIO | ON (HRS) | 0.00 | 0.00 |
| 3 PERCENT OF TOTAL | - | | | | 3 | PERCE | NT OF TO | OTAL | | |
| EXCESS EMISSIONS | 5 | | 0.00% | 0.00% | - | CEM D | OWNTIMI | E | 0.00% | 0.00% |
| | FOR OPACIT | Y, RECORD | ALL TIMES IN | MINUTES. FO | R GASES | S, RECO | RD ALL T | IMES IN HOU | RS. | |
| % Total Excess Emissions = | | Total Duration | n of Evence S | imissions / (Total | Operation | a Tima | CEM Davi | maima\ | | |
| | | | | , | Орствии | ig illite " | OCIVI DO | 41(a)(10) | | |
| % Total CEM Downtime = | | CEM Downti | me / Total Op | erating Time | | | | | | |
| NOTES: SPPRC's SBC's WE | re converte | d to an ac | tivated sl | udge aerator | system | n in Ju | ne 2014 | | | |
| SBC's are no lon | ger in-use. | | | | | | | | | |
| | | | | | | | | | | - |
| If no exceedances: I certify tha during the reporting period, I c | | | | | e results, | and that | to the be | st of my knowl | edge there were | no exceedances |
| SUBMITTED BY: | See certif | ication pa | ge at fron | t of report | | | _ | DATE: | | |

| REPORTING QUARTER: | | Pourth, 2016 | | AQD FILE #: #0203 (AI ID 447) |
|---|-------------------|--|-------------------------|-------------------------------|
| EMISSION UNIT(S): | | W.W.T.P. Thermal O | xidizer | |
| POLLUTANT MONITORED: | | H2S | | |
| | TOTAL | | | |
| DATE/TIME | DURATION (HRS) | MAX. CONC. (160 ppm, 366 day average) | CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shutdown | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | 110 000033 01113310113. | | |
| | | | | |
| b) Control equipment | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | | | |
| c) Process problems | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions, | | |
| Total | 0.00 | - | | |
| A) Other known source | | | | |
| d) Other known causes 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | No excess emissions. | | |
| , | | | | |
| e) Unknown causes | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | | | |
| f) Soot blowing | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | • | | |
| . \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | | | | |
| g) Fuel problems | | | | |
| 10/1/2016 1/1/2017 | | No excess emissions. | | |
| 1/1/201/ _ Total | 0.00 | 110 646655 61115510115. | | |
| IULE | 0.00 | | | |

| REPORTING QUARTER: | | Fourth, 2016 | | AQD FILE #: #0203 (AI ID 447) | | | |
|---|----------------------------|----------------------------------|-------------------------|-------------------------------|--|--|--|
| EMISSION UNIT(S): | | W.W.T.P. Thermal O | xidizer | | | | |
| POLLUTANT MONITORED: | | Temperature | | | | | |
| DATE/TIME | TOTAL DURATION (HRS) | MIN. TEMP. (°F, 3-hr average) | CAUSE/CORRECTIVE ACTION | | | | |
| a) Startup/Shutdown 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions, | | | | | |
| b) Control equipment 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions, | | | | | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions, | | | | | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | | | | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | | | | |
| f) Soot blowing 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | | | | |
| g) Fuel problems 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | | | | | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | Fourth, 2016 | AQD FILE#: #0203 (AI ID 447) |
|--------------------------------------|---------------------------|------------------------------|
| EMISSION UNIT(S): | W.W.T.P. Thermal Oxidizer | |
| POLLUTANT MONITORED: | H2S | |
| TOTAL ĐURATION ĐATE/TIME (HRS) | CAUSE/CORRECTIVE ACTION | |
| a) Monitor malfunction | | |
| b) Non-monitor malfunction | | |
| Total 0.00 | | |
| c) OA calibration | | |
| d) Other known causes | | |
| | | |
| | | |
| Total 0.00 | | |
| e),Unknownicauses | | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Pourth, 2016 | AQD FILE#: #0203 (AI ID 447) |
|----------------------------|----------------------------|---------------------------|------------------------------|
| EMISSION UNIT(S): | | W.W.T.P. Thermal Oxidizer | |
| POLLUTANT MONITORED: | | Temperatur e | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | |
| a) Monitor malfunction | 70:00 | | |
| b) Non-monitor malfunction | | | |
| Total | 0.00 | - | |
| c) QA calibration | 0:00 | | |
| d) Other known causes | | | |
| Total | 0.00 | - | |
| e) Unknown(causes) | 7410.00 PF | | |

AQD FILE #: #0203 (AI ID 447)

| POLLUTANT (circle one): | \$02 Other: | NOx | co | CO2 | 02 | TRS | H2S | HCL | Opacity | |
|--|----------------|---------------|---------------------|----------|--------------|-----------|-----------------------|---------------|---------------|-------------|
| | our. | | | - | MONITO | R | | | | |
| REPORTING QUARTER: | Fourth, 20 | 16 | | | MODEL: | | Thermoco | uple | | |
| FACILITY: | | | | | MFR: | | | | | |
| St. Paul Park Ref. | ining Co. LL | с | | _ | | | | | | |
| | | | | - | | | | | | |
| EMISSION SUBJECT ITEM: | COMG13 | | | - | | | AND AVERA DEGF - 3 | | ling averag | je |
| EMISSION UNIT(S): | W.W.T.P. T | hermal Oxi | dizer | | EMISSIO | N BASIS | 3 : | | | |
| | (N2 Vent Ga | s / TO Ten | mperature) | | 4 | 10 CFR | 61.349(a) | (2) | | |
| ASSOCIATED ITEMS: | TREA5, EQU | 1209, STRU | 22, SV065 | - | <u>1</u> | N Rule | 7011.99 | 30, Sub.E | | |
| | | | | | TOTAL C | | ING HOURS | 2209 | - | |
| A. EMISSION DATA SUMMA | RY | | | | B. CEM F | PERFOR | MANCE SU | IMMARY | | |
| 1 DURATION OF EXCES | | HRS) | | | | | | • | | |
| | | | Temperature | | 1 (| DURATIO | ON OF CEM | DOWNTIM | E DURING | |
| a) Startup/Shutdown | | | 0.00 | | | | E OPERATION | | | Temperature |
| b) Control equipment | | | 0.00 | - | | • | or malfunctio | | | 0.00 |
| c) Process problems | | | 0.00 | - | 4 | | ionitor maifu | Inction | | 0.00 |
| d) Other known causes | | | 0.00 | - | | c) QA ca | | | | 0.00 |
| e) Unknown causes | | | 0.00 | | | • | known caus | es | | 0.00 |
| f) Soot blowing | | | 0.00 | - | ' | e) Unkno | wn causes | | r | 0.00 |
| g) Fuel problems | 161 | | • | • | ١., | | NUDATION : | (LIDO) | | |
| 2 TOTAL DURATION (HE | (3) | | 0.00 | - | | | DURATION (| | | 0.00 |
| 3 PERCENT OF TOTAL | | | 0.005 | | 1 | | NT OF TOTA | ₩. | | 0.000 |
| EXCESS EMISSIONS | | | 0.00% | • |] ' | CEM DO | WNTIME | | | 0.00% |
| | FOR OPACIT | Y, RECORD / | ALL TIMES IN MIN | UTES. | FOR GAS | SES, RE | CORD ALL | TIMES IN H | OURS. | |
| % Total Excess Emissions = | | Total Duratio | n of Excess Emiss | ions / (| Total Open | ating Tin | ne - CEM Do | owntime) | | |
| % Total CEM Downtime = | | CEM Downti | me / Total Operatin | ng Time |) | | | | | |
| NOTES: | | | · | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| If no exceedances: I certify the exceedances during the report | | | | | | ilts, and | that to the b | est of my kno | owledge there | were no |
| SUBMITTED BY: | See certif | ication pa | ge at front of | repo | rt | | _ | DATE: | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE # #0203 (AI ID 447) |
|-----------------------|-------------------|-------------------------------|------------------------------|
| EMISSION UNIT(S): | | W.W.T.P. Thermal Oxidiz | er |
| POLLUTANT MONITORED: | | Temperature | |
| | TOTAL DURATION | | |
| DATE/TIME | (HRS) | MIN, TEMP, (°F, 3-hr average) | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | - | |
| b) Control equipment | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | • | |
| c) Process problems | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | • | |
| d) Other known causes | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | • | |
| e) Unknown causes | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| f) Soot blowing | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |
| g) Fuel problems | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Fourth, 2016 | | AQD FILE #. #0203 (AI | ID 447) |
|----------------------------|----------------------------|---------------------------|-------------|-----------------------|---------|
| EMISSION UNIT(S): | | W.W.T.P. Thermal Oxidizer | | | |
| POLLUTANT MONITORED: | | Temperature | <u> </u> | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | | | |
| a) Monitor malfunction | 0:00 | | | | |
| b) Non-monitor malfunction | | | | | |
| Total | 0.00 | - | | | |
| c) QA calibration Total | 0.00 | | | ¥ | |
| d) Other known causes | | | | | |
| Total | 0.00 | - | | | |
| e) Unknown causes Total | 10:00 | | | | |

AQO FRE# 80203 (AT ID 447)

| POLLUTANT (circle one): SO2 NOx CO CO2 | O2 TRS H2S HC | Opacity | | | |
|---|--|--|--|----------------|--|
| Other: S02 also a surrogate for | HACT Subpart UUU HAP Emi | sions | | | |
| | MONITO | n | | | |
| REPORTING QUARTER: Fourth, 2016 | MODEL | • | a, Limas 11, NDUV | | |
| FACILITY: St. Paul Park Refining CO. LLC | MFR; | ABB | | | |
| Section Notation | EMISSIC | N LIMIT AND AVERAGE | TIME: | | |
| EMISSION SUBJECT ITEM: EQUI33 | | 250 ppmd, 02 | free - 12 hour rolling average | | |
| EMISSION UNIT(S): | EMISSIC | N BASIS; | | | |
| #3 SRU/SCOT unit | | 40 CFR 60 NSP | | | |
| Unit Startup - 11/16/2004. CEM Startup 11/1 | 6/04 | 40 CFR 63.1568 | 8 Table 29 Opt 1a MACT Subpart | 000 | |
| ASSOCIATED ITEMS: TREA4, COMG7, EQUI163, EQUI296, EQU | 31210, EQUI211, STRU6 | | | | |
| | | | | | |
| PROCESS UNIT DESCRIPTIO EU0083 18 a 4-Stage Claus Sulfur Re | | | | | |
| The train includes the SRU inciners | tor. The sulfur unit is | designed to proce | es SO LTPD. | | |
| | TOTAL OPERATING HO | IRS | | | |
| | OF EMISSION UNIT: | 2209 | | | |
| A. EMISSION DATA SUMMARY | B. CEM PERFORMANCE SUMM | RY | C. SRU BYPASS INFORMATION | | |
| A Callodion On to Sommari | The standard contract | | O. SKO DIFASO IN OXIIATION | | |
| 1 DURATION OF EXCESS EMISSIONS (HRS) | 1 DURATION OF CEM DO | | 1 DURATION OF BYPASS | | |
| a) Startup/Shutdown0.00 | SOURCE OPERATION (I | • | a) Process Problems | 0.00 | |
| b) Control equipment 0.00 | a) Monitor matfunction | 0.00 | b) Other known causes | 0.00 | |
| | b) Non-monitor malfuncts c) QA calibration | 2.00 | c) Unknown causes | 0,00 | |
| d) Other known causes 0.00 | d) Other known causes | 1.00 | 2 TOTAL DURATION (HRS) | 0.00 | |
| f) Soot blowing 0.00 | e) Unknown causes | 0.00 | 3 PERCENT OF TOTAL | 0.00 | |
| g) Fuel problems 0.00 | | | OPERATION HOURS | 0.00% | |
| 2 TOTAL DURATION (HRS) | 2 TOTAL DURATION (HRS | 3.00 | | | |
| 3 PERCENT OF TOTAL | 3 PERCENT OF TOTAL | | į | | |
| EXCESS EMISSIONS 0.00% | CEM DOWNTIME | 0.14% | | | |
| FOR OPACITY, RECORD ALL TIMES IN MINUT | ES. FOR GASES, RECORD ALL | MES IN HOURS. | | | |
| % Total Excess Emissions = Total Duration of Excess Emissio | ns / (Total Operating Time - CEM D | owntime) | | | |
| % Total CEM Downtime = CEM Downtime / Total Operating | · · · | - · · · · · · · · · · · · · · · | | | |
| NOTES: Actual monitored values are noted in this section. | | | | | |
| During excess emission events, a value equal to 1.5 times the high calif | pration gas concentration is used to | replace any analyzor rea | idings over that value since measured data (| cints are not | |
| verifiable or accurate when at least 50% greater than the high calibration | n gas concentration, | | | | |
| | | | | | |
| If no exceedences: I certify that the required analyses were made, that I am fam there were no exceedences during the reporting period. I certify that I am familia knowledge the information is valid. | iliar with the results, and that to the r with the information in this report | best of my knowledge and that to the best of my | , | | |
| SUBMITTED BY: See certification page at front of | report | DATE: | | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQDFRE# #0203 (AI ID 447) |
|---|----------------------------|------------------------|---------------------------|
| EMISSION UNIT(S): | | #3 SRU/SCOT unit | · |
| POLLUTANT MONITORED: | | SO2 (ppm) | |
| DATE/TIME | TOTAL DURATION (HRS) | (ppm, 12-hr average) | CAUSE/CORRECTIVE ACTION |
| e) Startup/Shutdown 10/1/2016 | | Actual Recalc | |
| 1/1/2017 _ Total | 0.00 | _ No excess emissions. | |
| b) Control equipment 10/1/2016 1/1/2017 Total | | _ No excess emissions, | |
| c) Process problems 10/1/2018 1/1/2017 | 0,00 | No excess emissions. | |
| Total | 0.00 | | |
| d) Other known causes 10/1/2018 1/1/2017 Total | 0.00 | _No excess emissions, | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | _ No excess emissions. | |
| f) Soat blowing 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | |
| g) Fuel problems 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Fourth, 2016 | AGD FILE # #0203 (AI ID 44?) |
|---|----------------------------|------------------------------------|------------------------------|
| EMISSION UNIT(S): | | #3 SRU/SCOT unit | |
| POLLUTANT MONITORED: | | 502 | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | |
| a) Monitor malfunction | | | |
| Total | 0.00 | - | |
| b) Non-monitor malfunction | | | |
| Total | 0.00 | - | |
| c) QA calibration 11/7/16 13:00 11/7/16 15:00 | 2.00 | Quarterly calibration gas audit. | |
| Total | 2.00 | _ dentitions desiration for profit | |
| d) Other known causes 11/17/2016 13:00 11/17/2016 14:00 | 1.00 | _Preventive maintenance. | |
| Total | 1.00 | - | |
| e) Unknown causes | | | |
| Total . | 0.00 | - | |

CONTINUOUS EMISSION MONITOR SRU Bypass Information

| REPORTING QUARTE | R: | Fourth, 2016 AGDF | FILE # #0203 (AI ID 447) |
|-------------------|-------------------------------|--|--------------------------|
| EMISSION UNIT(S): | | #3 SRU/SCOT unit | |
| POLLUTANT MONITO | RED: | Bypass (Acid gas) | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | |
| | 0/1/2016 6/1/2017 0.00 | No bypasses that resulted in excess emissions. | |
| |))/1/2016 /1/2017 | No bypasses that resulted in excess emissions. | |
| | 0.00 | No bypasses that resulted in excess emissions. | |

AQD FILE # #0203 (AT ID 447)

| POLLUTANT (circle one): | SO2 Other: | NOx | со | CO2 (0 |) T | 'RS | H2S | HCL | Opacity | |
|--|-----------------|-------------------|---------------------------------------|-------------|-----------|---------|--------------|-------------|----------------|---------------------------------------|
| | Other: | | | MON | TO0 | | | | | |
| DECORPTIO OLIVETEO. | n | _ | | MON | | | | | | |
| REPORTING QUARTER: | Fourth, 201 | . 5 | | MODI | L. Adv | ance | Optima. | Limas 11, | NDUV | |
| FACILITY: | | | | MFR: | ABB | | | | | |
| St. Paul Park R | efining Co. | TTC | | _ | | | | | | |
| | | | | EMIS | SION LIM | IIT ANI | D AVERAG | E TIME: | | |
| EMISSION SUBJECT ITEM: | EQUI33 | | | | | | | 1 hour a | | |
| EMISSION UNIT(S): | #3 SRU/SCO1 | unit | | | 15. | 0 lb | S02/hr - | 3 hour r | olling average | <u>e</u> |
| EMISSION UNIT(S). | | | 10004 | - CMC | SION BAS | CIO. | | | | |
| | Unit Starte | <u>p - 11/16/</u> | 2004 | - EMIS | SIUN BA | 313: | WW KITTE | 7009.0020 | - AAQS/SIP | |
| ASSOCIATED ITEMS: | TREA4, COMO | 7, EQUI163 | , EQUI2 | 96, EQUI2 | io, EQU | 1211, | STRU6 | | | |
| | | | | | | | | | | |
| | | | | TOTA | L OPERA | ATING | HOURS | | | |
| | | | | OF E | NOISSIN | UNIT: | - | 2209 | _ | |
| | | | · · · · · · · · · · · · · · · · · · · | | | | | | | |
| A. EMISSION DATA SUMMA | RY | 4 5 - | | B. CE | M PERF | ORMA | NCE SUMA | MARY | | |
| 4 BURATION OF EVE | EEC EMICCION | 1 hr | 3-hr | | 4 0015 | 34 TIO | N 05 054 | 0014/4/714/ | DURING | |
| 1 DURATION OF EXCESS EMISSIONS (HRS) | | | , | | | | DOWNTIME | DUKING | | |
| a) Startup/Shutdown | | 0.00 | 0.00 | - | | | OPERATIO | | | |
| b) Control equipmen | | 0.00 | 0.00 | - | • | | malfunction | | 0.00 | |
| c) Process problems | | 0.00 | 0.00 | - | , | | nitor malfur | nction | 0.00 | |
| d) Other known caus | es | 0.00 | 0.00 | - | • | A calib | | | 2.00 | |
| e) Unknown causes | | 0.00 | 0.00 | - | • | | nown cause | S | 1.00 | |
| f) Soot blowing | | 0.00 | 0.00 | - i | e) U | INKNOW | m causes | | 0.00 | |
| g) Fuel problems | (LDO) | 0.00 | 0.00 | - i | | | | 150 | | |
| 2 TOTAL DURATION | | 0.00 | 0.00 | - | | | JRATION (F | • | 3.00 | |
| 3 PERCENT OF TOTA | | | | | | | OF TOTAL | - | | |
| EXCESS EMISSION | 5 | 0.00% | 0.00% | - | CEN | N DOW | VNTIME | | 0.14% | |
| | FOR OPACITY | , RECORD A | LL TIMES | IN MINUTE | S. FOR | GASE | S, RECOR | O ALL TIMES | S IN HOURS. | |
| % Total Excess Emissions = | | Total Duratio | n of Evcer | e Emissions | //Total (| nerali | ina Time - (| `EM Downtii | me) | |
| | | | | | • | opolau | ng rinto - c | | iiic) | |
| % Total CEM Downtime = | | CEM Downtin | ne / Total | Operating T | me | | | | | |
| NOTE: | | | | | | ·····- | | | | · · · · · · · · · · · · · · · · · · · |
| #3 SRU/SCOT 1b | SO2/hr CEM d | owntime is | the sa | me as ren | orted | for # | 3 SPU/SC | OT SO2 p | 17M . | - W |
| 43 Bito, Beer 25 | DOE/ III CEIT C | <u> </u> | | | JICEG | 101 % | S Dite/De | <u> </u> | , p | |
| | | | | | | | | | | |
| If no exceedances: I certify the during the reporting period. It | | | | | | | | | | |
| SUBMITTED BY: | See certifi | cation pag | e at fr | ont of re | port | | • | DATE: | | • |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AT ID 447) |
|--|-------------------|--|-------------------------------|
| EMISSION UNIT(S): | | #3 SRU/SCOT unit | |
| POLLUTANT MONITORED: | | SO2 (lbs/nr) - 45 | <u>lb/h</u> r, 1-hr average |
| | TOTAL | MAN GOLIOCH | |
| DATE/TIME | DURATION (HRS) | MAX. CONCEN. (lbs/hr, 1-hr average) | CAUSE/CORRECTIVE ACTION |
| | | | |
| a) Startup/Shutdown | | | |
| 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | _NU excess emissions. | |
| · | 0.00 | | |
| b) Control equipment | | | |
| 10/1/2016 | | | |
| 1/1/2017 _ Total | 0,00 | _No excess emissions. | |
| (अब | 0,00 | | |
| c) Process problems | | | |
| 10/1/2016 | | | |
| 1/1/2017_ | | No excess emissions. | |
| Total | 0.00 | | |
| d) Other known causes | | | |
| 10/1/2016 | | | |
| 1/1/2017 _ | | No excess emissions, | |
| Total | 0.00 | | |
| e) Unknown causes | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | • | |
| D. Cook Marriage | | | |
| f) Soot blowing 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | • | |
| g) Fuel problems | | | |
| 10/1/2016 | | | |
| 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | = | |

| REPORTING QUARTER: | | Fourth, 2016 | ACD FILE # #0203 (AI ID 447) |
|--|----------------------------|--|------------------------------|
| EMISSION UNIT(S): | | #3 SRU/SCOT unit | |
| POLLUTANT MONITORED: | | SO2 (ibs/hr) - 15 | 5 LD/hr, 3-hr average |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCEN. (ibs/hr, 3-hr average) | CAUSE/CORRECTIVE ACTION |
| DATETIME | 11.07 | (tostili, o-iti diologo) | ONOSSOCIAL ACTION |
| a) Startup/Shutdown 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | |
| b) Control equipment 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | |
| c) Process problems | 0.00 | | |
| 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| d) Other known causes 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | |
| e) Unknown causes 10/1/2016 1/1/2017 | | _No excess emissions. | |
| Total f) Soot blowing | 0.00 | | |
| 10/1/2016 1/1/2017 Total | 0,00 | _No excess emissions, | |
| g) Fuel problems 10/1/2016 1/1/2017 | | No excess emissions. | |
| Total | 0.00 | | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | | Fourth, 2016 AQD FILE # #0203 (AI ID 44?) |
|----------------------------|----------------------------|---|
| EMISSION UNIT(S): | | #3 SRU/SCOT unit |
| POLLUTANT MONITORED: | | 502 (lbs/hr) |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION |
| | NOTE: so2 lb/hr | downtime same as reported for #3 SRU/SCOT SO2 ppm |
| a) Monitor malfunction | | |
| Total | 0.00 | See #3 SCOT ppm page for details |
| b) Non-monitor malfunction | | |
| Total | 0.00 | See #3 SCOT ppm page for details |
| c) QA calibration | | |
| Total | 2,00 | See #3 SCOT ppm page for details |
| d) Other known causes | | |
| Total | 1.00 | See #3 SCOT ppm page for details |
| e) Unknown causes | | |
| Total | 0.00 | See #3 SCOT ppm page for details |

AQD FILE #: #0203 (AI ID 447)

| POLLUTANT (circle one): | SO2 | NOx | CO | CO2 | 02 | TRS | H2S | HCL | Opacity | | |
|---|-----------------|---------------|--------------|----------|---|-------------|-------------|------------|-------------|-------------|--|
| | Other: (| Temperature |) | | | | | | | | |
| | | | | • | MONITOR | t | | | | | |
| REPORTING QUARTER: | Fourth, 20 | 16 | | - | MODEL: | | NA | | | | |
| FACILITY: | | | | | MFR: | | AN | | | | |
| St. Paul Park | Refining Co | . LLC | | - | | | | | | - | |
| EMISSION SUBJECT ITEM: | EU 088 | | | | EMISSION | N LIMIT AN | ID AVERAG | E TIME: | | | |
| | Unit Start | up - 10/20 | /2008 | • | > | 550 Deg | F - 3 ho | ur rolli | ng average | | |
| C | NO UDOS DE | | | | 5.000. | | | | | | |
| EMISSION UNIT(S): | NP VEPR P | ase 1 | | - | EMISSION | N BASIS: | Title V | | ·-··· | | |
| ASSOCIATED ITEMS: | TREALD, TR | EA7, STRU2 | 5 | | | | MN R. 70 | 07.0800 | | | |
| | | | . | - | TOTAL OF | PERATING | HOURS | | | | |
| | | | | | OF EMISS | SION UNIT | ١. | 0 | - | | |
| A. EMISSION DATA SUMM | ARY | | | | B. CEM P | ERFORMA | ANCE SUMA | MARY | | | |
| | | | _ | | | | | | | | |
| 1 DURATION OF EXC | | INS (HRS) | | | | | OF CEM DO | | DURING | | |
| a) Startup/Shutdow | | • | 0.00 | - | SOURCE OPERATION (HRS) | | | | | | |
| b) Control equipme c) Process problem | | • | 0.00 | - | a) Monitor malfunction 0.00 b) Non-monitor malfunction 0.00 | | | | | | |
| d) Other known cau | | • | 0.00 | - | 1 | QA catibr | | | 0.00 | | |
| e) Unknown causes | | • | 0.00 | • | | | own causes | | 0.00 | | |
| f) Soot blowing | | • | 0.00 | • | |) Unknown | | | 0.00 | | |
| g) Fuel problems | | • | 0.00 | - | , | | | | | | |
| 2 TOTAL DURATION | (HRS) | • | 0.00 | | 2 T | OTAL DU | RATION (HR | (S) | 0.00 | | |
| 3 PERCENT OF TOT | AL | • | | | 3 P | ERCENT (| OF TOTAL | | | | |
| EXCESS EMISSION | NS | - | 0.00% | - | С | EM DOW | NTIME | | 0.00% | | |
| | FOR OPACIT | Y, RECORD | ALL TIMES | S IN MI | NUTES. F | OR GASE | S, RECORD | ALL TIMES | B IN HOURS. | | |
| | | 7.1.15 | | | | | | | | | |
| % Total Excess Emissions = | | Total Duratio | | | | tal Operati | ng Time - C | EM Downtin | ne) | | |
| % Total CEM Downtime = | | CEM Downti | me / Total | Operat | ing Time | | | | | | |
| NOTES: | | | | | | | | | | | |
| <u> </u> | | | _ | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| If no exceedances: I certify to were no exceedances during knowledge the information is | the reporting p | | | | | | | | | e there | |
| SUBMITTED BY: | | ication pa | ge at fi | cont c | of report | <u> </u> | _ | DATE: | | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQDFILE#: #0203 (AT ID 447) |
|---|----------------------------|----------------------------------|-----------------------------|
| EMISSION UNIT(S): | | NP VEPR Phase 1 | |
| POLLUTANT MONITORED: | | Temperature | |
| DATE/TIME | TOTAL DURATION (HRS) | MIN. TEMP. (°F, 3-hr average) | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| b) Control equipment 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | |
| f) Soot blowing 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| g) Fuel problems 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | |

CONTINUOUS EMISSION MONITOR DOWNTIME REPORT

| REPORTING QUARTER: | Fourth, | 2016 | AQD FILE #: | #0203 (AI ID 447) | |
|-------------------------------|---|------------------|-------------|-------------------|--|
| EMISSION UNIT(S): | NP VEPR | Phase 1 | | | |
| POLLUTANT MONITORED: | Temperat | ure | | | |
| | TOTAL JRATION (HRS) <u>CAUSE/CO</u> | ORRECTIVE ACTION | | | |
| a) Monitor malfunction | *0:00 CO | | | | ٠., ٠ |
| b) Non-monitor malfunction | | | | | |
| Total | 0.00 | | | | |
| c) QA(calibration. | 0.00 | | | | |
| d) Other known causes | | | | | |
| Total | 0.00 | | | | |
| e) Uńknownicauses : ਸ਼ਹਿਰਤ | 70:00: | | No. | | in the second se |

AQD FILE #: #0203 (AI ID 447)

| POLLUTANT (circle one): | SO2 | NOx | CO | CO2 | 02 | TRS | H2S | HCL | · Opacity | |
|--|------------------|----------------|------------|---------|---|------------|-------------------------------|-----------|---------------|---|
| | Other: | l'emperature |) | | | | | | | |
| | | | | - | MONITOR | | | | | |
| REPORTING QUARTER: | Fourth, 201 | 6 | | | MODEL: | | NA | | | |
| | | • | | - | | | | | | |
| FACILITY: | | | | | MFR: | | NA | | | |
| St. Paul Park R | efining Co. | LLC | | _ | | | | | | |
| ENGOLONI OLIO IEGE ITEM | | | | | ENNORION | | | F 711.4F. | | |
| EMISSION SUBJECT ITEM: | EU 089 | | | - | | | ID AVERAGI | | ng average | |
| EMISSION UNIT(S): | NP VEPR Pha | ce 2 | | | | 330 209 | | 41 10111 | ng average | |
| LIMINOSION CINTIQS. | ME VEEK FIIG | 3C 2 | | - | EMISSION | I BASIS: | Title V | Darmit | | |
| ASSOCIATED ITEMS: | TREA6, TREA | 8. STRU29 | | | _,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | DAOIO. | MN R. 70 | | • | _ |
| | | -, | | - | | | | | | _ |
| | | | | | TOTAL OF | PERATING | HOURS | | | |
| | | | | | OF EMISS | ION UNIT | : _ | 133 | _ | |
| | | | | | | | | | | |
| A. EMISSION DATA SUMMA | RY | | | | B. CEM P | ERFORM/ | ANCE SUMN | MARY | | |
| . = | | | | | | | | | | |
| 1 DURATION OF EXC | | NS (HRS) | | | | | OF CEM DO | | DURING | |
| a) Startup/Shutdown | | - | 0.00 | - | | | PERATION | (HKS) | | |
| b) Control equipmen c) Process problems | | = | 0.00 | - | , | | nalfunction itor matfuncti | ion | 0.00 | |
| d) Other known caus | | - | 0.00 | - | | QA calibr | | 1011 | 0.00 | |
| e) Unknown causes | JC3 | - | 0.00 | - | | | own causes | | 0.00 | |
| f) Soot blowing | | - | 0.00 | - | , | Unknown | | | 0.00 | |
| g) Fuel problems | | - | 0.00 | - |] | | 022000 | | | |
| 2 TOTAL DURATION | (HRS) | - | 0.00 | - | 2 TO | OTAL DUE | RATION (HR | S) | 0.00 | |
| 3 PERCENT OF TOTA | • • | - | | - | | | OF TOTAL | -, | | |
| EXCESS EMISSION | | | 0.00% | | | EM DOW | | | 0.00% | |
| | | | | - | | | | | | |
| | FOR OPACITY | , RECORD A | ALL TIMES | S IN MI | NUTES. FO | OR GASE | S, RECORD | ALL TIMES | S IN HOURS. | |
| % Total Excess Emissions = | | Total Duration | n of Exces | s Emis | sions / (Tot | al Operati | ng Time - CE | M Downtin | ne) | |
| % Total CEM Downtime = | | CEM Downtin | ne / Total | Onerat | inn Time | • | • | | • | |
| - | | OL111 00111101 | ne i iolai | Operat | ing time | | | | | |
| NOTES: | | | | | - | | | | . | |
| | | | | | | | | · · · | | _ |
| | | • | | | | | | | | |
| | | | | | | | | | | |
| If no exceedances: I certify the were no exceedances during knowledge the information is | the reporting pe | | | | | | | | | ; |
| SUBMITTED BY: | See certifi | cation pag | ge at fr | ont o | f report | | _ | DATE: | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE#: #0203 (AI ID 447) |
|---|----------------------------|----------------------------------|------------------------------|
| EMISSION UNIT(S): | | NP VEPR Phase 2 | |
| POLLUTANT MONITORED: | | Temperature | · |
| DATE/TIME | TOTAL DURATION (HRS) | MIN. TEMP. (°F, 3-hr average) | CAUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | _No excess emissions. | |
| Total b) Control equipment 10/1/2016 1/1/2017 | 0.00 | No excess emissions. | |
| Total | 0.00 | | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| f) Soot blowing 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | |
| g) Fuel problems 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: | #0203 (AI ID 4 | 47) |
|---------------------------------|----------------------------|-------------------------|-------------|----------------|-----|
| EMISSION UNIT(S): | | NP VEPR Phase 2 | | | |
| POLLUTANT MONITORED: | | Temperature | | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | | | |
| a) Monitor malfunction Total | 0.007 | | | | |
| b) Non-monitor malfunction | | | | | |
| Total | 0.00 | | | | |
| c)(QA)calibration | 10.00 | | | | |
| d) Other known causes | | | | | |
| | | | | | |
| Total | 0.00 | | | | |
| e) Unknown causes Total | 0.00% | | | | |

AQD FILE #: #0203 (AI ID 447)

| POLLUTANT (circle one): | SO2 NOx (| 00 002 (| O2 TRS | H2S HCL | Opacity | | |
|--|--|--------------------|--|---|---------------------------------------|--|--|
| REPORTING QUARTER: | Fourth, 2016 | | | scon/Uras 26 - NOx gnos 206 - O ₂ | | | |
| FACILITY: St. Paul Park Re | fining Co. LLC | · | MFR: ABB | | | | |
| EMISSION SUBJECT ITEM: | EQUI42 | | EMISSION LIMIT AND | OAVERAGE TIME: 30 Day rolling aver | age | | |
| EMISSION UNIT(S): | Boiler 7 Boiler 16-B-7 | 8 | EMISSION BASIS: | NSPS Db | | | |
| ASSOCIATED ITEMS: | COMG27 (Boilers 7&8), EQ EQUI214, STRU44 | | DPERATING HOURS | OF EMISSION UNIT: | 2177 | | |
| A. EMISSION DATA SUMMAR | | | 3. CEM Performance | Summary | | | |
| | SS EMISSIONS (HRS) | | | OF CEM DOWNTIME DU | RING | | |
| 1 a) Startup/Shutdown | lb/mmbtu (30 Day) o.oo | | SOURCE OPERATION (HRS) | | | | |
| b) Control equipment c) Process problems | 0.00 | | a) Monitor malfunction 0.00 b) Non-monitor malfunction 0.00 | | | | |
| d) Other known cause e) Unknown causes f) Soot blowing | 0.00 | | c) QA calibration 1.00 d) Other known causes 2.00 e) Unknown causes 0.00 | | | | |
| g) Fuel problems 2 TOTAL DURATION (FIGURE 1) 3 PERCENT OF TOTAL EXCESS EMISSIONS | - | | 2 TOTAL DURATION (HRS) 3.00 3 PERCENT OF TOTAL CEM DOWNTIME 0.14% | | | | |
| EVCE32 EIMISSIONS | | | | | 0.14% | | |
| | FOR OPACITY, RECORD ALL T | IMES IN MINUT | ES. FOR GASES, RI | ECORD ALL TIMES IN H | OURS. | | |
| % Total Excess Emissions = | Total Duration of E | xcess Emissions | / (Total Operating Tin | ne - CEM Downtime) | | | |
| % Total CEM Downtime = NOTES: | CEM Downtime / T | otal Operating Ti | me | | | | |
| **** | | | | | · · · · · · · · · · · · · · · · · · · | | |
| exceedances during the reportivalid. | the required analyses were made, ng period. I certify that I am familia | r with the informa | ation in this report and | d that to the best of my kni | | | |
| SUBMITTED BY: | See certification page at f | ront of report | <u> </u> | DATE: | | | |

EXCESS EMISSION REPORT

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|---|----------------------------|----------------------|-------------------------------|
| EMISSION UNIT(S): | | Boiler 16-B-7 | |
| POLLUTANT MONITORED: | | NOx (lbs/mmbtu) | <u> </u> |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCENTRATION C | AUSE/CORRECTIVE ACTION |
| a) Startup/Shutdown 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| b) Control equipment 10/1/2016 1/1/2017 Total | Ø.00 | No excess emissions. | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| d) Other known causes 10/1/2016 1/1/2017 Total | Ø.00 | No excess emissions. | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | Ø.00 | No excess emissions. | |
| f) Soot blowing 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| g) Fuel problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |

| REPORTING QUARTER: | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|---|----------------------------|-------------------------------|
| EMISSION UNIT(S): | 16-B-7 | |
| POLLUTANT MONITORED: | NOx | |
| TO: DURA DATE/TIME (HF | TION | |
| a) Monitor malfunction Total 0:0 | 103×3 | |
| b) Non-monitor malfunction | | |
| Total 0.0 | 00 | |
| c) QA calibration | | |
| d) Other known causes 11/1/2016 14:00 11/1/2016 16:00 2.0 | 00 Preventive maintenance. | |
| Total 2.0 | 00 | |
| e) Unknown causes. | <u>1.68.</u> | |

AQD FILE #: #0203 (AI ID 447)

| POLLUTANT (circle one): | SO2 | NOx | co | CO2 | 02 | TRS | H2S | HCL | Opacity |
|---|--|----------------------|-----------------|---------------------------------------|-----------------------------------|------------|-----------------|-------------|-----------------|
| REPORTING QUARTER: | Other: | FLOW | | • | MONITO | | Fuel Gas F) | low_Rate/F0 | G H2S CEH |
| FACILITY: St. Faul Park Ref: | ining Co. LL | c | | | MFR: | | | | |
| EMISSION SUBJECT ITEM: | EQUI42 | | | | | | AND AVERAG | | rolling average |
| EMISSION UNIT(S): | Boiler 7 Boiler 16- | B-7 | | | EMISSIC | ON BASIS: | : | SIP for SC | 02 NAAQS |
| ASSOCIATED ITEMS: | COMG7, COM | 6 927, EQUI16 | 33, STRU44 | • | OPERAT | TING HOU | RS OF EMISS | SION UNIT: | 2177 |
| A. EMISSION DATA SUMMARY | <u>, </u> | | | | B. CEM | Performa | nce Summar | у | # |
| DURATION OF EXCES | S EMISSIONS | (HRS) | | | 1 DURATION OF CEM DOWNTIME DURING | | | | |
| 1 | | | lb/mmbtu | | | SOURCE | OPERATION | (HRS) | • |
| a) Startup/Shutdown | | | 0.00 | | | | | | Fuel Gas |
| b) Control equipment | | | 0.00 | _ | - | a) Monitor | malfunction | | 0.00 |
| c) Process problems | | | 0.00 | _ | | b) Non-mo | onitor malfunct | lon | 0.00 |
| d) Other known causes | | | 0.00 | _ | ł | c) QA cali | bration | | 0.00 |
| e) Unknown causes | | | 0.00 | _ | 1 | d) Other k | nown causes | | 0.00 |
| f) Soot blowing | | | 0.00 | _ | | e) Unknov | vn causes | | 0.00 |
| g) Fuel problems | | | 0.00 | - | | | | | |
| 2 TOTAL DURATION (HE | RS) | | 0.00 | • | 2 | TOTAL DI | JRATION (HR | (S) | 0.00 |
| 3 PERCENT OF TOTAL | -• | | | - | | | OF TOTAL | · | |
| EXCESS EMISSIONS | | | 0.00% | - | | CEM DOV | NNTIME | | 0.001 |
| | FOR OPACI | TY, RECORD | ALL TIMES IN I | MINUTES. FOR | R GASES, F | RECORD | ALL TIMES IN | HOURS. | |
| % Total Excess Emissions = | | Total Duratio | n of Excess Em | issions / (Total | Operating 1 | lime - CE | d Downtime) | | |
| % Total CEM Downlime | e = | CEM Downtii | me / Total Oper | ating Time | | | | | |
| NOTES: | | | | | | | . | | |
| 3 | | | | · · · · · · · · · · · · · · · · · · · | | | | ··· | |
| If no exceedances: I certify that during the reporting period. I ce | | | | | | | | | |
| SUBMITTED BY: | See certif | ication pag | ge at front | of report | | | - | DATE: | |

| REPORTING QUARTER: | | Fourth, 2016 | AGD FILE #: #0203 (AI ID 447) | | | |
|---|-------------------|--|-------------------------------|--|--|--|
| EMISSION UNIT(\$): | | Boiler 16-B-7 | | | | |
| POLLUTANT MONITORED: | | SO2 lb/mmbtu | | | | |
| | TOTAL DURATION | | | | | |
| DATE/TIME | (HRS) | MAX. CONCENTRATION CAUSE/CORRECTIVE ACTION | | | | |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | No excess emissions. | | | | |
| Total | 0.00 | _ (40 BACCISE CITIOSICITO: | | | | |
| b) Control equipment 10/1/2016 1/1/2017 | | No excess emissions. | | | | |
| Total | 0.00 | _10 0,0000 0,11100,1110. | | | | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | | | | |
| d) Other known causes 10/1/2016 1/1/2017 | 0.00 | No excess emissions, | | | | |
| Total | 0.00 | - | | | | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | | | |
| f) Soot blowing 10/1/2016 | | | | | | |
| 1/1/2017 Total | 0.00 | No excess emissions, | | | | |
| 10181 | Ų.UU | | | | | |
| g) Fuel problems | | | | | | |
| 10/1/2016 1/1/2017 | | No excess emissions, | | | | |
| Taket | 0.00 | | | | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (| AI ID 447) |
|----------------------------|----------------------------|-------------------------|-------------------------|--|
| EMISSION UNIT(S): | | 16-B-7 | | |
| POLLUTANT MONITORED: | | Fuel Gas Flow Rate | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | _ | |
| a) Monitor manufaction, | 27 0 00 X | | | A Company of the Comp |
| b) Non-monitor malfunction | | | | |
| Total | 0,00 | | | |
| c) OA calibration | 0.00 | | | |
| d) Other known causes | | | | |
| Total | 0.00 | | | |
| e) Unknown causes | F7:00:003 | | | |

AQD FILE#: #0203 (AI ID 447)

| POLLUTANT (circle one): | SO2 NOX CO | CO2 | O2 TRS | H2S | HCL | Opacity | | |
|----------------------------|---|--------------|-------------------------------|-------------------------|--------------------|-------------|--|--|
| | Other: | _ | | | | | | |
| | | | MONITOR | Syscon/Uras 2 | 6 - NOX | | | |
| REPORTING QUARTER: | Fourth, 2016 | - | MODEL: | Magnos 206 - | 0, | | | |
| FACILITY: | | | MFR; ABB | | | | | |
| St. Paul Park Re | fining Co. LLC | | III 14, | | · | | | |
| | | - | | | | | | |
| | | - | EMISSION LIMIT | AND AVERAGE TIM | ΛE: | | | |
| EMISSION SUBJECT ITEM: | EQUI43 | - | 0.20 lb/mmbtu | u - 30 Day roll | ing avera | ge | | |
| EMISSION UNIT(S): | Boiler 8 | | | | | | | |
| , , | Boiler 16-B-8 | - | EMISSION BASIS | : <u>nse</u> | S Db | | | |
| | | | | | | | | |
| ASSOCIATED ITEMS: | COMG27 (Boilers 7&8), EQUI215 | <u>.</u> | | | | | | |
| | EQUI217, STRU45 | - | 005047840440 | LIDO OF FLAGOROUS | | | | |
| | | | OPERATING HO | URS OF EMISSION | UNII: | 1955 | | |
| | | | | | | | | |
| | | | | | | | | |
| A. EMISSION DATA SUMMARY | Υ | | B. CEM Perform | ance Summary | | | | |
| DURATION OF EXCE | SS EMISSIONS (HRS) | | 1 DURATI | ON OF CEM DOWN | ITIME DURIN | G | | |
| 1 | lb/mmbtu | | COURCE OREDATION (URC) | | | | | |
| a) Startup/Shutdown | (30-Day) 0 . 00 | | SOURCE OPERATION (HRS) | | | | | |
| b) Control equipment | 0.00 | | a) Monitor malfunction 0 . 00 | | | | | |
| c) Process problems | 0.00 | | | nonitor malfunction | - | 0.00 | | |
| d) Other known cause: | | | c) QA ca | | | 1.00 | | |
| e) Unknown causes | 0.00 | | | Other known causes 2.00 | | | | |
| f) Soot blowing | 0.00 | | 1 ' | own causes | - | 0.00 | | |
| g) Fuel problems | 0.00 | | · | | _ | | | |
| 2 TOTAL DURATION (H | (RS) 0.00 | | 2 TOTAL I | DURATION (HRS) | | 3.00 | | |
| 3 PERCENT OF TOTAL | | | 3 PERCENT OF TOTAL | | | | | |
| EXCESS EMISSIONS | 0.00% | | CEM DO | WNTIME | | 0.15% | | |
| | FOR OPACITY, RECORD ALL TIMES IN | MINI IT | S FOR GASES I | RECORD ALL TIMES | S IN HOURS | | | |
| | | | | | | | | |
| % Total Excess Emissions = | Total Duration of Excess 6 | missions | / (Total Operating | Time - CEM Downtii | me) | | | |
| % Total CEM Downtime = | CEM Downtime / Total Op | erating T | ime | | | | | |
| NOTES: | | | | | | | | |
| | | | | | | | | |
| | | | <u></u> | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Management trade of a | the required engineer was made at the | na Forestr - | austh the secults - | | Campa Dage - 1 - 1 | | | |
| | the required analyses were made, that I a ig period. I certify that I am familiar with the | | | | | | | |
| SUBMITTED BY: | See certification page at fro | nt of | report | DA* | TE: | | | |

| REPORTING QUARTER: | | Fourth, 2016 | · | AQD FILE#: #0203 (AI ID 447) | |
|---|-------------------|-----------------------|---------------------------|------------------------------|--|
| EMISSION UNIT(S): | | Boiler 16-B-8 | | | |
| POLLUTANT MONITORED: | | NOx (1bs/mmbtu) | | | |
| 04757948 | TOTAL DURATION | | | | |
| DATE/TIME | (HRS) | MAX. CONCENTRATION | N CAUSE/CORRECTIVE ACTION | | |
| a) Startup/Shutdown 10/1/2018 1/1/2017 Total | 0.00 | _No excess emissions. | | | |
| b) Control equipment 10/1/2016 1/1/2017 | | No excess emissions. | | | |
| Total | 0.00 | - | | | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | | |
| e) Unknown causes 10/1/2016 1/1/2017 | | No excess emissions. | | | |
| Total | 0.00 | - | | | |
| f) Goot blowing 16/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | | |
| g) Fuel problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | | |

| REPORTING QUARTER: | Fourth, 2016 | AQD FILE# #0203 (AI ID 447) |
|---|--------------------------------------|-----------------------------|
| EMISSION UNIT(S): | 16-B-8 | |
| POLLUTANT MONITORED: | NOx | <u> </u> |
| TOT DURA DATE/TIME (HR | TION | |
| a) Monitor malfunction | OP TO | |
| b) Non-monitor malfunction | | |
| Total 0.0 | 00 | |
| c) QA(calibration 1970) 13:00 13:00 14:00 15:00 16:00 | O A Quarterly calibration gas audit. | |
| d) Other known causes 11/1/2016 14:00 11/1/2016 16:00 2.0 | O Preventive maintenance. | |
| Total 2.0 | 0 | |
| e) Unknown causes 4. Total: \$2.5.5 to \$0.00 | 0 | |

AQD FILE #: #0203 (AI ID 447)

| POLLUTANT (circle one): | SO2 | NOx FLOW | co | CO2 | 02 | TRS | H2S | HCL | Opacity | |
|--|---------------|----------------|------------------|------------------|--------------|------------|------------------|------------|-----------------------------|-----|
| | | 11.0 | | = | MONITOR | 2 | | | | |
| REPORTING QUARTER: | Fourth, 20 | 16 | | • | MODEL: | | Fuel Gas Fl | low Rate/F | G H2S CEM | |
| FACILITY: St. Paul Park Refir | ding Co. LLC | | | | MFR: _ | | | | | _ |
| EMISSION SUBJECT ITEM: | EQUI43 | <u> </u> | | | | | AND AVERAG | | rolling average | |
| | | | | • | _ | | | | | _ |
| EMISSION UNIT(S): | Boiler 8 | | | | | | , | | | |
| | Boiler 16- | B-8 | | • | EMISSIO | N BASI | S: | SIP for S | D2 NAAQS | |
| ASSOCIATED ITEMS: | CONG7, COM | G27, EQUI16 | 3, STRU44 | | | | | | | |
| | | | | | OPERAT | ING HO | URS OF EMISS | SION UNIT: | 1955 | |
| A SAME OF DATA CHIMINA | | | | | D 0545 | 10 ml 0 mm | | | | |
| A. EMISSION DATA SUMMARY DURATION OF EXCESS | EMISSIONS (| HRS) | | | | | on of CEM D | | URING | |
| 1 | LIVINGOTO (| 1110) | lb/mmbtu | | 1 | | E OPERATION | = | OKINO | |
| a) Startup/Shutdown | | | 0.00 | | | | , _,,,, | (1.1.10) | Fuel Gas | į |
| b) Control equipment | | • | 0.00 | • | 8 |) Monit | or maifunction | | 0.00 | |
| c) Process problems | | • | 0.00 | • | | | nonitor malfunct | tion | 0.00 | |
| d) Other known causes | | | 0.00 | - | 6 | QA ca | alibration | | 0.00 | |
| e) Unknown causes | | | 0.00 | • | 0 | i) Other | known causes | | 0.00 | |
| n Soot blowing | | | 0.00 | - | |) Unkni | own causes | | 0.00 | |
| g) Fuel problems | | • | 0.00 | - | | | | | | |
| 2 TOTAL DURATION (HRS | S) | • | 0.00 | | 2 1 | TOTAL I | DURATION (HR | (S) | 0.00 | |
| 3 PERCENT OF TOTAL | | • | | - | 1 | | NT OF TOTAL | • | _ | |
| EXCESS EMISSIONS | | - | 0.00% | • | ' | CEM DO | OWNTIME | | 0.001 | |
| | FOR OPACI | ry, record A | LL TIMES IN A | AINUTES. FOR | GASES, R | ECORE | ALL TIMES IN | HOURS. | | |
| % Total Excess Emissions = | | Total Duration | of Excess Emi | issions / (Total | Operating Ti | ime - Cl | EM Downtime) | | | |
| % Total CEM Downtime = NOTES: | <u></u> | | ne / Total Opera | ating Time | | _ | | | ••• | |
| | | | | | | | | | | _ |
| | - | <u>-</u> | | | | | · | | | |
| If no exceedances: I certify that the reporting period. I certify that | | | | | | | | | re were no exceedances duri | ing |
| SUBMITTED BY: | | | e at front o | | _ | | - | DATE: | | |

| REPORTING QUARTER: | | Fourth, 2016 | | AQD FILE #: #6203 (AT ID 447) |
|---|----------------------------|---------------------------|-------------------------|-------------------------------|
| EMISSION UNIT(S): | | Boiler 16-B-8 | | |
| POLLUTANT MONITORED: | | SO2 lb/mmbtu | - | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION | |
| DATETIME | (11110) | MANUEL CONTOCKT IN STROKE | CAUGE CORRECTIVE AUTION | |
| a) Startup/Shutdown 10/1/2016 1/1/2017 _ | | No excess emissions. | | |
| Total | 0.00 | _ | | |
| b) Control equipment 10/1/2016 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | | | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | |
| d) Other known causes 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | | |
| a) Unknown causes 10/1/2016 1/1/2017 _ Total | 0.00 | No excess emissions. | | |
| f) Soot blowing 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | | |
| g) Fuel problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | |

| REPORTING QUARTER: | | Fourth, 2016 AQD FILE # #0203 (AI | ID 447) |
|--------------------------------|----------------------------|-----------------------------------|---------|
| EMISSION UNIT(S): | • | 16-B-8 | |
| POLLUTANT MONITORED: | | Fuel Gas Flow Rate | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | |
| a) Monitor malfunction | 0:00 HT | | 17 |
| b) Non-monitor malfunction | | | |
| Total | 0.00 | | |
| c)(QA)(calibration) | 0.00 | | |
| d) Other known causes | | | |
| Total | 0.00 | | |
| e) Unknown causes 中華 第一章 | (0.00 | | |

AQD FILE#: #0203 (AI ID 447)

| POLLUTANT (circle one): | SO2 NOX CO | CO2 O2 TRS | H2S HC | CL Opacity |
|-------------------------------|---|---------------------------------|-----------------------------|------------|
| | | MONITOR | ABB Limas11 - NO | × |
| REPORTING QUARTER: | Fourth, 2016 | MODEL: | Magnos 206 - 0 ₂ | - |
| FACILITY: | | MFR: ABB | ····· | |
| St. Paul Park Re | fining Co. LLC | | | |
| | | | | |
| EMISSION SUBJECT ITEM: | EQUI44 | EMISSION LIMIT 40 ppmvd at 0 | AND AVERAGE TIME: | |
| EMISSION UNIT(S): | FCC Charge Heater (8-B-1) Unit Startup - 5/7/2012 | EMISSION BASI | S: <u>NSPS</u> | Ja |
| ASSOCIATED ITEMS: | COMG7, EQUI163, MR070, MR071 STRU34 | | | |
| | | | | |
| | R070 and MR071 have been select | | heater. | |
| These numbers are | s not yet entered into the Titl | e V permit. | | |
| | | OPERATING HO | OURS OF EMISSION UN | NIT: 2209 |
| A. EMISSION DATA SUMMAR | · · · · · · · · · · · · · · · · · · · | B. CEM Perform | Iance Summary | |
| | SS EMISSIONS (HRS) | | ON OF CEM DOWNTIN | AE DURING |
| DOM: NOW OF EACH | ppmvd | 1 201011 | OH OF CEM DOWN | NE DORING |
| 1 | (30-Day) | SOURC | E OPERATION (HRS) | |
| a) Startup/Shutdown | 0.00 | | | Fuel Gas |
| b) Control equipment | 0.00 | a) Monit | or malfunction | 0.00 |
| c) Process problems | 0.00 | 1 | monitor malfunction | 0.00 |
| d) Other known cause | | | alibration | 1.00 |
| e) Unknown causes | 0.00 | | known causes | 4.00 |
| f) Soot blowing | 0.00 | · | own causes | 0.00 |
| g) Fuel problems | 0.00 | o, o, | OM 000000 | |
| 1 | | 2 7074 | DUDATION (UDO) | |
| 2 TOTAL DURATION (F | · - | | DURATION (HRS) | 5.00 |
| 3 PERCENT OF TOTAL | | | NT OF TOTAL | _ |
| EXCESS EMISSIONS | 0.00% | CEM DO | OWNTIME | 0.23% |
| | FOR OPACITY, RECORD ALL TIMES | IN MINUTES. FOR GASES | , RECORD ALL TIMES | IN HOURS. |
| % Total Excess Emissions = | Total Duration of Excess E | missions / (Total Operating | Time - CEM Downtime) | • |
| % Total CEM Downtime = NOTES: | CEM Downtime / Total Op | erating Time | | |
| | | | | |
| | t the required analyses were made, that I | | | |
| valiu, | - | | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|---|-----------------------------|---|-------------------------------|
| EMISSION UNIT(S): | | FCC Charge Heater (8-B-1) | |
| POLLUTANT MONITORED: | | NOx (ppmvd @ 0% O2) | |
| DATE/TIME | TOTAL DURATIO N (HRS) | MAX. CONCENTRATION_CAUSE/CORRECTIVE ACTIO | ON . |
| a) Startup/Shutdown 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | |
| b) Control equipment 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| f) Soot blowing 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | |
| g) Fuel problems 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|--|-----------------------------|--|-------------------------------|
| EMISSION UNIT(S): | | PCC Charge Heater (8-B-1) | |
| POLLUTANT MONITORED: | | NOx | |
| DATE/TIME | TOTAL DURATIO N (HRS) | CAUSE/CORRECTIVE ACTION | |
| a) Monitor malfunction | | | |
| Total | 0.00 | | |
| b) Non-monitor malfunction | | | |
| Total | 0.00 | • | |
| c) QA calibration 11/10/2016 13:00 11/10/2016 14:00 Total | 1.00 1.00 | Quaterly calibration gas audit. | |
| d) Other known causes 10/20/2016 9:00 10/20/2016 10:00 12/6/2016 13:00 12/6/2016 16:00 | 1.00 3.00 | Missing data. Preventative maintenance. | |
| Total e) Unknown causes | 4.00 | | |
| Total - | 0.00 | | |

AQD FILE #: #0203 (AI ID 447)

| POLLUTANT (circle one): | SO2 | NOx | CO | CO2 | 02 | TRS | H2S | HCL | Opacity | • |
|--|--------------|----------------|-------------|---------------|--------------------------|---------------------|------------------------------|------------|-------------|---------------|
| REPORTING QUARTER: | Fourth, 20 | FLOW 16 | | - | MONITO MODEL: MFR: | MR074 (1 | <u>luel gas)</u> .l (fuel | | (pilot gas) | |
| FACILITY: St. Paul Park R | efining Co. | LLC | | | | | | | ., | |
| | | | | _ | | | | | | |
| EMISSION SUBJECT ITEM: | EQUI44 | | | | | N LIMIT AND SO2/mmb | | | ng average | |
| EMISSION UNIT(S): | | Heater (8-) | | - - | | | | | | |
| ASSOCIATED ITEMS: | COMG7, EOU | II163 | | - | EMISSIC | N BASIS: | | SIP for S | O2 NAAQS | |
| NOTE: New MR numbers in and pilot flow in | | 075 have be | | | | | | | | |
| | | | | | OPERAT | ING HOUR | S OF EMIS | SSION UNIT | 2209 | |
| A. EMISSION DATA SUMMA | | | | | B. CEM | Performan | ce Summa | ry | | |
| DURATION OF EXC | ESS EMISSION | IS (HRS) | | | 1 | | | DOWNTIM | E DURING | |
| 1 | | | | ib/mmbtu | | SOURCE | OPERATION | ON (HRS) | | |
| a) Startup/Shutdown | | | | 0.00 | - | | | | - | Fuel Gas |
| b) Control equipment | | | | 0.00 | - | ·-· | malfunctio | | - | 0.00 |
| c) Process problems | | | | 0.00 | -{ | | onitor malfu | inction | - | 0.00 |
| d) Other known caus | es | | | 0.00 | -{ | c) QA cali | | | - | 0.00 |
| e) Unknown causes | | | | 0.00 | - | - | nown caus | es | - | 0.00 |
| f) Soot blowing | | | | 0.00 | ┪ | e) Unknov | vii causes | | - | 0,00 |
| g) Fuel problems | (UDO) | | | 0.00 | ┥ . | . TOTAL D | IDATION. | (150) | | |
| 2 TOTAL DURATION (| | | | 0.00 | | TOTAL D | | | - | 0.00 |
| 3 PERCENT OF TOTAL EXCESS EMISSION | | | | 0.00% | <u> </u> | CEM DOV | | NL . | - | 0.00% |
| | FOR OPACIT | Y, RECORD A | LL TIMES II | N MINUTES. | FOR GAS | ES, RECO | RD ALL TIN | MES IN HOU | IRS. | |
| % Total Excess Emissions = | | Total Duration | of Excess E | missions / (T | otal Operat | ing Time - | CEM Down | time) | | |
| % Total CEM Downtime = NOTES: | | CEM Downtime | / Total Ope | erating Time | | | | | | . |
| if no exceedances: I certify the exceedances during the report | | | | | | | | | | |
| valid. SUBMITTEØ 8Y: | See certif | ication page | e at from | nt of repo | rt | | | DATE: | | |

EXCESS EMISSION REPORT

| REPORTING QUARTER: | | Fourth, 2016 | <u></u> | AQD FILE #: #0203 (AI ID 447) |
|---|-------------------|----------------------|---------------------------------------|-------------------------------|
| EMISSION UNIT(S): | | EQUI44 | | - |
| POLLUTANT MONITORED: | | SO2 lb/mmbtu | · · · · · · · · · · · · · · · · · · · | |
| | TOTAL DURATION | | | |
| DATE/TIME | (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION | |
| a) Startup/Shutdown 10/1/2016 | | | | |
| 1/1/2017 _ Total | 0.00 | No excess emissions. | | |
| b) Control equipment 10/1/2016 1/1/2017 | 2,24 | No excess emissions. | | |
| Total | 0.00 | No excess emissions. | | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | |
| d) Other known causes 10/1/2016 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | | | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | |
| f) Soot blowing | 0.00 | | | |
| 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | |
| g) Fuel problems 10/1/2016 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | • | | |

| REPORTING QUARTER: | | Fourth, 2016 | _ | AQD FILE #: #0203 | (AI ID 447) |
|----------------------------|----------------------------|-------------------------|-----|-------------------|-------------|
| EMISSION UNIT(S): | | Heater 8-B-1 (EQUI44) | | | |
| POLLUTANT MONITORED: | | Fuel Gas Flow Rate | _ | | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | | | |
| a) Monitor malfunction | 10!00 | | | | |
| b) Non-monitor malfunction | | | | | |
| Total | 0,00 | - | | | |
| c) QA calibration . | , (0 ¹ 00) | | | | |
| d) Other known causes | | | | | |
| | | | | | |
| Total | 0.00 | • | | | |
| e)Uriknown causes | 0.00 | | 1.3 | | |

AQD FILE#: #0203 (AI ID 447)

| POLLUTANT (circle ene): | 502 | NOx | \odot | CO2 | O2 | TRS | H2S HC | L Opacity | |
|------------------------------------|----------------------|--------------|----------------------|----------------|----------------|-----------|-------------------------------------|----------------|---------------|
| | Other: | | | | MONITOR | , | | 22 | |
| REPORTING QUARTER: | Fourth, 201 | 6 | | | MODEL: | • | Syscon/Uras 26 - Magnos 206 - 0, | | |
| HEI ORTHO GOART | 1002011, 202 | • | | | MODEL. | | Hagilos 200 - Oz | | |
| FACILITY: | | | | | MFR: A | BB | | | |
| St. Paul Park Re | fining Co. LL | С | | | _ | | | | <u> </u> |
| | | | | | | | | | |
| | | | | | EMISSION | I LIMIT A | AND AVERAGE TIME; | | |
| EMISSION SUBJECT ITEM: | COMG27 | | | | | | Per Year - 12 mon | | |
| CHICAGO CHANTON | | | | | _(_ | for Bo | ilers 7 & 8 combin | ed as GP 032) | |
| EMISSION UNIT(S): | COMG27 | T 2 and | 16.2.0 | | EMICOION | | | | |
| | Boilers 16- | B- / And | 10-2-8 | | CMISSIOL | A DYOIO | TV Air Permit - 40 CFR 52.21, Mi | | |
| ASSOCIATED ITEMS: | EQUI42, EQU | TAR POI | 1913 | | | | 40 CFR 52.21, M1 | nn.k.7007.3000 | ' |
| AGGOOMIED ITEMS | | | QUI217, STRU4 | 6 STRII45 | | | | Boiler 7 | Boiler 8 |
| | 20012111 | 01210, 2 | Animal, privat | ., 011043 | OPERATI | NG HOL | IRS OF EMISSION UNIT | | 1955 |
| | | | | | | | | | |
| | | _ | | | | | | | |
| A. EMISSION DATA SUMMAR | | | | | B. CEM P | etiotus | nce Summary | | |
| DURATION OF EXCE | SS EMISSIONS (I | HRS) | | | 10 | URATIO | N OF CEM DOWNTIME | DURING | |
| 1 | | | Ton/Year | | s | OURCE | OPERATION (HRS) | | |
| a) Startup/Shutdown | | | 0.00 | | į | | | Boiler 7 | Boller 8 |
| b) Control equipment | | | 0.00_ | | | • | malfunction | 0.00 | 0.00 |
| c) Process problems | | | 0.00 | | | • | onitor malfunction | 0.00 | 0.00 |
| d) Other known cause | S | | 0.00 | | | QA call | | 1.00 | 1.00 |
| e) Unknown causes | | | 0.00 | | | • | nown causes | 2.00 | 2.00 |
| f) Soot blowing | | | 0.00 | | ° |) Unknow | vn causes | 0.00 | 0.00 |
| g) Fuel problems | | | 0.00 | | | | | | |
| 2 TOTAL DURATION (H | · · | | 0.00 | | E | | URATION (HRS) | 3.00 | 3.00 |
| 3 PERCENT OF TOTAL | | | 0.00% | | | | T OF TOTAL | | |
| EXCESS EMISSIONS | | | 0.00# | | ۱ ۲ | EM OUV | VNTIME | 0.14% | 0.15% |
| | FOR OPACITY | , RECORD | ALL TIMES IN MI | NUTES. FOR | GASES, REG | CORD A | LL TIMES IN HOURS. | | |
| % Total Excess Emissions = | | Total Durath | on of Excess Emis | sions / (Total | Operating Tim | ne - CEN | 1 Downtime) | - | - |
| % Total CEM Downtime = | | | ime / Total Operat | | - | | - | | |
| NOTES: CEMS downtime fo | | | • | - | ted if inc | lividus | illy or for both | | |
| CEMS for Boiler | | | | | | | | | |
| combined CO limi | | | | | | / | | | |
| COMDITION | | | | | | | | | ···· |
| | | | | | | | | | |
| | | | | | | | | | |
| If no exceedances: I certify that | | | | | | | | | dances during |
| the reporting period, I certify th | at I am familiar wit | h the inform | ation in this report | and that to th | e best of my l | knowled | ge the information is valid | I, | _ |
| SUBMITTED BY: | See certifi | cation pa | age at front o | of report | | | DATE: | | |

| REPORTING QUARTER: | | Pourth, 2016 | | AQD FILE# #0203 (AI ID 447) | | | |
|---|-------------------|-------------------------|-------------------------|-----------------------------|--|--|--|
| EMISSION UNIT(S): | | GP 032 - 16-B-7 and | 16-B-8 | | | | |
| POLLUTANT MONITORED: | | CO Ton/Year | | | | | |
| TE COME | TOTAL DURATION | MAY AQUASUTA ITAL | | | | | |
| DATE/TIME | (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION | | | | |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | No excess emissions. | | | | | |
| Total | 0.00 | | | | | | |
| b) Control equipment 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | | | | |
| lotai | 0.00 | | | | | | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | | | | | |
| d) Other known causes 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | | | | |
| Iotal | 0,00 | | | | | | |
| e) Unknown causes 10/1/2016 1/1/2017 _ Total | 0.00 | _No excess emissions. | | | | | |
| lotal | 0.00 | | | | | | |
| 1) Sout blowing 10/1/2016 1/1/2017 Total | 0.00 | No excess emissions. | | | | | |
| g) Fuel problems 10/1/2016 1/1/2017 | | No excess emissions. | | ` | | | |
| Total | 0.00 | 110 0,0000 01110010115. | | | | | |

| REPORTING QUARTER: | Fourth, 2016 | AC | DFILE#: #0203 (AI ID 447) | |
|--|----------------------------------|---|---------------------------|--|
| EMISSION UNIT(S): | 16-B-7 | - · · · · · · · · · · · · · · · · · · · | | |
| POLLUTANT MONITORED: | co | | | |
| TOTAL DURATION DATE/TIME (HR\$) | CAUSE/CORRECTIVE ACTION | | | |
| a) Monitor mattunction Total 0.00 | <u></u> | | ` | |
| b) Non-monitor malfunction | | | | |
| Total 0.00 | _ | | | |
| c) QA calibration 1/8/16/13:00 10/8/16/14:00 Total | Quarterly calibration gas audit. | | | |
| d) Other known causes 11/1/2016 14:00 11/1/2016 16:00 2.00 | Preventive maintenance. | | | |
| Total 2.00 | - | | | |
| e) Unknown causes | | | Section 1 | |

| REPORTING QUARTER: | | Pourth, 2016 | AQDFILE# #0203 (AI ID 447) |
|--|----------------------------|----------------------------------|----------------------------|
| EMISSION UNIT(S): | | 16-B-8 | |
| POLLUTANT MONITORED: | | СО | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | |
| a) Monitor malfunction Total | 0.001 | | |
| b) Non-monitor malfunction | | | |
| Total | 0.00 | - | |
| c) QA calibration V QUEST ENGINE STORE OF THE STORE OF TH | 的 种 化的 | Quarterly calibration gas audit; | |
| d) Other known causes 11/1/2016 14:00 11/1/2016 16:00 | 2.00 | Preventive maintenance. | |
| Total | 2.00 | - | |
| e)/Unknown/Causes | 0.00 | | |

AQD FILE #: #0203 (AI ID 447)

| POLLUTANT (circle one): | SO2 Other: | NOX | co | CO2 | 02 | TRS | H2S HCL | Opacity | |
|-------------------------------------|-----------------|----------------|------------------|-------------------|-------------------|------------|--|-------------------|---|
| REPORTING QUARTER: | Faureh 30 | 36 | | | MONITOR MODEL: | ? | Syscon/Uras 26 - 1 | Юх | |
| REPORTING GOARTER. | Fourth, 20 | | | | MODEL. | | Magnos 206 - 0 ₂ | | |
| FACILITY: | | | | | MFR: | | ABB | | |
| st. Paul Park Ref | ining Co. Li | c | | | | | | | |
| | | | | | | | | | |
| CAMPONON SUBJECT ITEM | | | | | EMISSION | N LIMIT A | ND AVERAGE TIME: | | - 1 |
| EMISSION SUBJECT ITEM: | COMG27 | | | | | | 38 Tons Per Year | | |
| EMISSION UNIT(S): | COMG27 | | | | | | (for Boilers 7 & 8 | combined as | GP 0321 |
| EMISSION CHITCO. | | -B-7 and 16- | B-8 | | EMISSION | N BASIS | TV Air Permit - Li | mir to avoid | NGD |
| | MOTICID TO | 2 | | | | | 40 CFR 52,21, Minu | | |
| ASSOCIATED ITEMS: | EQUI42, EQ | JI43, EQUI21 | 12, | | | | | | - · · · · · · · · · · · · · · · · · · · |
| | | | 1217, STRU44 | , STRU45 | | | | Boiler 7 | Boiler 8 |
| | | | | | OPERATI | NG HOU | RS OF EMISSION UNIT: | 2177 | 1955 |
| | | | | | | | | - | |
| | | | | | | | | | |
| | | · | | | | | | | |
| A. EMISSION DATA SUMMARY | | (1/20) | | | | | nce Summary | | |
| DURATION OF EXCES | SS EMISSIONS | (HKS) | ton/yr | | | | N OF CEM DOWNTIME I OPERATION (HRS) | JURING | |
| a) Startup/Shutdown | | | 0.00 | | | | o, 2,0,1,0,1,7,1,10) | Boller 7 | Boiler 8 |
| b) Control equipment | | - | 0.00 | | а |) Monitor | malfunction | 0.00 | 0.00 |
| c) Process problems | | _ | 0.00 | | | - | nitor malfunction | 0.00 | 0.00 |
| d) Other known causes | 5 | · - | 0.00 | | C | QA call | oration | 1.00 | 1.00 |
| e) Unknown causes | | | 0.00 | | ď |) Other ki | nown causes | 2.00 | 2,00 |
| n Soot blowing | | _ | 0.00 | | e; |) Unknow | n causes | 0.00 | 0.00 |
| g) Fuel problems | | _ | 0.00 | | | | | | |
| 2 TOTAL DURATION (H | RS) | - | 0.00 | | 2 T | OTAL DU | JRATION (HRS) | 3.00 | 3.00 |
| 3 PERCENT OF TOTAL | | | | | 1 | | OF TOTAL | | |
| EXCESS EMISSIONS | | _ | 0.00% | | \ c | EM DOV | VNTIME | 0.14% | 0.15% |
| | | | | | <u> </u> | | | | |
| | FOR OPACIT | Y, RECORD A | LL TIMES IN M | INUTES. FOR | GASES, RE | CORD A | LL TIMES IN HOURS. | | |
| | | | | | | | | | |
| % Total Excess Emissions = | | Total Duration | of Excess Emi | ssions / (Total (| Operating Tir | ne - CEM | l Downtime) | | |
| % Total CEM Downtime = | | CEM Downtim | ne / Total Opera | iting Time | | | | | |
| | | | | | | | | | |
| NOTES: CEMS downtime for | the GP 032 | combined em | ission limit | is reporte | d if indi | viduall | y or for both | | |
| CEMS for Boiler 7 | and Boiler | 8 are down. | These page | es are appli | cable only | y for t | he | | |
| combined NOx limit | t | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| If no exceedances: I certify that | the required ar | ialvses were m | ade, that I am t | amiliar with the | results, and | that to # | ne best of my knowledne | there were no evo | eedances during |
| the reporting period. I certify the | | | | | | | | | |
| SUBMITTED BY: | See certif: | ication page | at front o | f report | | | DATE: | | |

| REPORTING QUARTER: | | Pourth, 2016 | | AQD FILE #: #0203 (AI ID 447) |
|---|----------|---------------------------|-----------------------|-------------------------------|
| EMISSION UNIT(S): | | GP 032 - 16-B-7 and 16-B- | -8 | |
| POLLUTANT MONITORED: | | NOx (Tons/Year) | | |
| | TOTAL | | | |
| | DURATION | | | |
| DATE/TIME | (HRS) | MAX. CONCENTRATION CA | USE/CORRECTIVE ACTION | |
| a) Startup/Shutdown | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | _ 110 CAGCSS CITIESIONS. | | |
| 10.01 | 0.00 | | | |
| b) Control equipment | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | | | |
| | | | | |
| c) Process problems | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | _ | | |
| | | | | |
| d) Other known causes | | | | |
| 10/1/2016 | | A1 | | |
| 1/1/2017 | 0.00 | No excess emissions. | | |
| Total | 0.00 | | | |
| e) Unknown causes | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0,00 | | | |
| | | • | | |
| n Soot blowing | | | | |
| 10/1/2016 | | | | |
| 1/1/2017 | | _No excess emissions. | | |
| Total | 0.00 | | | |
| | | | | |
| g) Fuel problems 10/1/2016 | | | | |
| 1/1/2017 | | No excess emissions. | | |
| Total | 0.00 | _140 EACESS CITUSSIONS. | | |
| I ULEI | 0,00 | | | |

| REPORTING QUARTER: | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|--|---|-------------------------------|
| EMISSION UNIT(S): | 16-8-7 | |
| POLLUTANT MONITORED: | NOx | |
| TOTAL DURATION DATE/TIME (HRS) | CAUSE/CORRECTIVE ACTION | |
| Note: NOX CEM downtime is the a) Monifor malfunction | s same downtime reported on the form for Boiler 7 for N | Dx ppm |
| b) Non-monitor malfunction | | |
| Total 0.00 | - | |
| c) OAtcalibration st [1/8/16 13:00] (1/8/16 13:00] (1/8/16 14:00] (1/8/16 1 | Ouaneny(calibration gas audi | |
| d) Other known causes 11/1/2016 14:00 11/1/2016 16:00 2.00 | Preventive maintenance. | |
| | _ | |
| Total 2.00 | | |
| e) Unknown/causes | | |

| REPORTING QUARTER: | Fourth, 2016 | QD FILE#: #0203 (AI ID 447) |
|--|--|-----------------------------|
| EMISSION UNIT(S): | 16-B·8 | |
| POLLUTANT MONITORED: | NOx | |
| TOTAL DURATION DATE/TIME (HRS) | CAUSE/CORRECTIVE ACTION | |
| | same downtime reported on the form for Boiler 8 for NO | x ppm |
| b) Non-monitor malfunction | | |
| Total 0.00 | - | |
| C) OA calibration (1975) 1975 1975 1975 1975 1975 1975 1975 1975 | Quarterly calibration gas audit. | |
| d) Other known causes 11/1/2016 14:00 11/1/2016 16:00 2.00 | Preventive maintenance. | |
| Total 2.00 | | |
| e) Unknown causes | | |

| POLLUTANT (circle one): | SO2 NO | | CO2 O2 | TRS | H2S | HCL Opacity | |
|---|----------------------|-------------|--------------------|-------------------------------|-------------|-----------------|---------------------------------------|
| Other: | This report addr | sses Flar | re H2S emissio | ons. | | | |
| REPORTING QUARTER: | Fourth, 2016 | | MONITOR MODEL: | Maxum II | | | |
| FACILITY: | | | MFR; | Siemens, Ser | rial No. 00 | 01060 | |
| St. Paul Park Refin | ing Co. LLC | | | | | | |
| EMISSION SUBJECT ITEM: | TREA13 | | EMISSION | LIMIT AND AVE 162 ppm (3-1 | | | |
| EMISSION UNIT(S): | | | EMISSION | BASIS: | | | |
| TREA13 Refinery fla | re stack | | | 40 CFR 63 | NESHAP S | ubpart Ja | |
| | | | | | | | |
| ASSOCIATED ITEMS: | FUGI73 | | | | | | |
| | | | | | | ERATING HOURS | |
| | | | | | OF EMISSI | ON UNIT: | 2209 |
| A. EMISSION DATA SUMMARY | | B CEM | PERFORMANCE | SILMMARY | | | |
| 1 DURATION OF EXCESS I | EMISSIONS | | DURATION OF C | | | | |
| EMISSIONS (HRS) | H2S | I | DURING SOURCE | | | | |
| a) Startup/Shutdown | 3.00 | | a) Monitor malfund | tion | 0.00 | | |
| b) Control equipment | 0.00 | ١ ا |) Non-monitor ma | Ifunction | 0.00 | | |
| c) Process problems | 0.00 | | c) QA calibration | | 2.00 | | |
| d) Other known causes | 6.00 | | i) Other known ca | uses | 108.00 | | |
| e) Unknown causes | 3.00 | | e) Unknown cause | !\$ | 0.00 | } | |
| f) Soot blowing | 0.00 | | | | | | |
| g) Fuel problems | 0.00 | 2 1 | TOTAL DURATIO | N (HRS) | 110.00 | | |
| 2 TOTAL DURATION (HRS) | 12 | 3 F | PERCENT OF TO | TAL | | | |
| 3 PERCENT OF TOTAL | | | CEM DOWNTIME | | 4.98% | ļ | |
| EXCESS EMISSIONS | 0.54% | | | | | | |
| | FOR OPACITY, RECO | RD ALL TIM | ES IN MINUTES | FOR GASES, | RECORD ALL | TIMES IN HOURS. | |
| % Total Excess Exhibite attento SAR | | | | | | | · · · · · · · · · · · · · · · · · · · |
| | | | | | | | |
| % Total CEM Downtime = | CEM Downtime / Total | i Operating | Time | | | | |
| NOTES: | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| If no exceedances: I certify the exceedances during the reporting p | | | | | | | |
| SUBMITTED BY: | See certification | | | - | | DATE: | morniation is valid. |

SARA Reportable Emissions Report - H2S (i.e., > 162 ppm)

| REPORTING QUARTER: EMISSION UNIT(S): | | ourth, 2016 | - | AQD FILE #: #0203 | (AI ID | 447 |
|--|----------------------------|---|--|-------------------|--------|-----|
| | | TREA13 Refinery fla | re stack | | | |
| POLLUTANT MONITORED: | | NA | - | | | |
| DATE/TIME | TOTAL DURATION (HRS) | MAX CONCENTRATION (ppm, 3-hour rolling avg.) | CAUSE/CORRECTIVE ACTION | | | |
| a) Startup/Shutdown 11/19/2016 11:00 11/19/2016 14:00 | 3 | 236 | Please see Incident E in the report summary. | | | |
| Total | 3.00 | - | | | | |
| b) Control equipment 10/1/2016 1/1/2017 | | | | | | |
| Total | 0.00 | - | | | | |
| c) Pracess problems 10/1/2016 1/1/2017 | | | | | | |
| Total | 0.00 | - | | | | |
| d) Other known causes 11/4/2016 0:00 11/4/2016 3:00 12/18/2016 5:00 | 3 | 667 | Please see Incident C In the report summary. | | | |
| 12/18/2016 8:00 Total | 3 6.00 | 627 | Please see Incident G in the report summary. | | | |
| e) Unknown causes 11/23/2016 11:00 11/23/2016 14:00 Total | <u>3</u> 3.00 | _ 231 | Please see Incident F in the report summary. | | | |
| f) Soot blowing | | | | | | |
| 10/1/2016 1/1/2017 | | | | | | |
| Total | 0.00 | - | | | | |
| g) Fuel problems 10/1/2016 1/1/2017 | | _ | | | | |
| Total | 0.00 | = | | | | |

| REPORTING QUARTER: | Fourth, 2016 | AQDFILE# #0203 (AI ID 447) |
|---|---|----------------------------|
| EMISSION UNIT(S): | TREAl3 Refinery flare stack | |
| POLLUTANT MONITORED: | H2S | |
| TOT DURA' DATE/TIME (HR | ION ORRECTIVE ACTION | |
| a) Monitor malfunction Total 000 | | |
| b) Non-monitor malfunction | | |
| Total 0.0 | | |
| c) QA(calibration (2) (4) (12/6/2016) (10:00 (2) (4) (12/6/2016) (12:00 (2) (2) (2) (16:12:00 (2) (2) (2) (2) (2) (2) (2) (2) (2) (2) | Counterly Calibration gas audit | |
| d) Other known causes | | |
| 10/1/2016 13:00 10/1/2016 14:00 1.0 10/4/2016 15:00 | Missing data during instrumentation troubleshooting. | |
| 10/5/2016 9:00 18.0 10/6/2016 10:00 | Failed morning calibration. Analyzer recalibrated followed by validation. | |
| 10/6/16 16:00 6.00 | Preventive maintenance. | |
| 10/17/16 10:00 10/17/16 19:00 9.00 | Maintenance completed on BTU App that affected H2S analyzer. | |
| 12/10/16 17:00 12/11/16 8:00 15.0 | Invalid moisture data. | |
| 12/12/16 2:00 12/14/16 7:00 53.0 | Invalid moisture data. | |
| 12/28/2016 10:00 12/28/2016 18:00 6.00 | Preventive maintenance on sample system. | |
| | | |
| | | |
| | | |
| | | |
| Total 108.0 | 0 | |
| e) Unknown causes Total 0:00 | | |

AQD FILE #: #0203 (AT ID 447)

| POLLUTANT (circle one): | SO2 Other: | NOx Flow | со | CO2 | 02 MONITO | TRS | H2S | HCL | Opacity |
|--|---------------------------------------|------------------|-----------------------|-----------------|-----------------------------------|--------------|--------------|--|---------|
| REPORTING QUARTER: | Fourth, 20 | 16 | | | MONITO MODEL: | ĸ | DigitalFl | ow GF868 | |
| FACILITY: St. Paul Park Ref | ining Co. I | LC | | | MFR: | General | Electric | | |
| EMISSION SUBJECT ITEM: | TREA13 | | | | WORK P | | | ND AVERAGE | |
| EMISSION UNIT(S): | TREA13 Ref | inery flar | e stack | | EMISSIO | N BASIS: | | | |
| ASSOCIATED ITEMS: | FUGI73 | | | v | | 40 CFR | 63 NESH | AP Subpart | <u></u> |
| | | | | | OPERAT | ING HOUR | S OF EMISS | ON UNIT: Total 2209 | - |
| A. EMISSION DATA SUMMAR | Υ | • • • • | | | B. CEM | Performan | ce Summary | | |
| 1 DURATION OF EXCES | | (HRS) | | | 1 DURATION OF CEM DOWNTIME DURING | | | | |
| | | , , | MMSCF/24-hr | | SOURCE | OPERATI | ION (HRS) | | |
| a) Startup/Shutdown | | | 0.00 | | | | | | |
| b) Control equipment | | | 0.00 | | a) Monito | r malfuncti | on | 0.00 | _ i |
| c) Process problems | | | 0.00 | | b) Non-m | nonitor malf | unction | 0.00 | _ |
| d) Other known causes | i | | 0.00 | | c) QA cat | | | 0.00 | - |
| e) Unknown causes | | | 0.00 | | | known caus | | 0.00 | - |
| f) Soot blowing | | | 0.00 | | e) Unkno | wn causes | | 0.00 | - |
| g) Fuel problems | | | 0.00 | | 1 | | | | |
| 2 TOTAL DURATION (H | • | | 0.00 | | 2 TOTAL | . DURATIO | N (HRS) | 0.00 | _ |
| 3 PERCENT OF TOTAL | | | | | 3 PERCENT OF TOTAL | | | | 1 |
| EXCESS EMISSIONS | | | 0.00% | | CEM DO | WNTIME | | 0.00% | - |
| | FOR OPACIT | Y, RECORD / | ALL TIMES IN MIN | UTES. FOR | GASES, R | ECORD AL | L TIMES IN H | IOURS. | - |
| % Total Excess Emissions = | | Total Duratio | n of Excess Emiss | ions / (Totel (| Operating T | ime - CEM | Downtime) | | |
| % Total CEM Downtime = | | CEM Downli | me / Total Operation | g Time | | | | | |
| NOTES: | , , , , , , , , , , , , , , , , , , , | | | | | | | | |
| | | | | | | | | ······································ | |
| | | | | | | | | | |
| If no exceedances: I certify that exceedances during the reportin valid. | g period. I cert | ify that I am fa | miliar with the infor | mation in this | | | | | |
| SUBMITTED BY: | See certif | ication pa | ge at front of | report | | | _ | DATE: | |

| REPORTING QUARTER: | | Fourth, 2016 | | AQD FILE #: #0203 (AI ID 447) | | |
|---|-------------------|------------------------|-------------------------|-------------------------------|--|--|
| EMISSION UNIT(S): | | TREAl3 Refinery flare | stack | - | | |
| POLLUTANT MONITORED: | | MMBTU/24-hr Rolling A | vg. | | | |
| | TOTAL DURATION | | | | | |
| DATE/TIME | (HRS) | MAX. CONCENTRATION | CAUSE/CORRECTIVE ACTION | | | |
| a) Startup/Shutdown 10/1/2016 1/1/2017 | | No excess emissions. | | | | |
| Total | 0,00 | _ | | | | |
| b) Control equipment 10/1/2016 1/1/2017 | | No excess emissions. | | | | |
| Total | 0.00 | - | | | | |
| c) Process problems 10/1/2016 1/1/2017 Total | 0.00 | _ No excess emissions. | | | | |
| d) Other known causes 10/1/2016 1/1/2017 | 0.00 | _ No excess emissions. | | | | |
| Total | 0.00 | | | | | |
| e) Unknown causes 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | | | | |
| f) Soot blowing 10/1/2016 1/1/2017 Total | 0.00 | _No excess emissions. | | | | |
| g) Fuel problems 10/1/2016 1/1/2017 | 0.00 | _No excess emissions. | | | | |
| Total | 0.00 | | | | | |

| REPORTING QUARTER: | | Fourth, 2016 | AQD FILE #: #0203 (AI ID 447) |
|----------------------------|----------------------------|-----------------------------|-------------------------------|
| EMISSION UNIT(S): | | TREA13 Refinery flare stack | <u></u> |
| POLLUTANT MONITORED: | | Flare Vent Gas Flow Rate | |
| DATE/TIME | TOTAL DURATION (HRS) | CAUSE/CORRECTIVE ACTION | |
| a) Monitor malfunction | 0.00 | | |
| b) Non-monitor malfunction | | | |
| Total | 0.00 | • | |
| c) QA calibration | e 900 00 TO | | |
| d) Other known causes | | | |
| Total | 0.00 | - | |
| e) Unknown(causes | | | |